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# THE PRESENT STATUS OF STATISTICAL WORK AND HOW IT NEEDS TO BE DEVELOPED IN THE SERVICE OF THE FEDERAL GOVERNMENT.*

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I assume that we are invited to discuss the present condition of Federal statistics and to point out, if possible, the pathway along which real progress can be made.

When this association was formed, the Fourth Census, that of 1830, had long been completed. There was practically no statistical analysis or inquiry of any kind in progress under the Federal Government. At this distance, the temporary organizations of the early Census offices seem to us to have assembled from nowhere, performed with zeal if not with discretion their appointed tasks, left us their records in awkward or musty tomes and vanished into oblivion. Like the gleam which pierces the night at regular intervals from some distant lighthouse on a rock bound coast, were those far away Census enumerations.

It is different in our day; the gleam from the Census lighthouse is no longer of the disappearing variety. There are, moreover, many other prominent statistical lights in the Federal establishment. So great has been the progress, and so general has become the necessity for statistical compilations, that, in the year 1914, practically every department of the Federal Government is engaged in preparing statistics in some form.

In the Department of Commerce, practically all the bureaus obtain and publish more or less statistical material. Among these that of the Census easily leads. It possesses a dozen intercensal activities, in the aggregate almost equal in impor-

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tance to the decennial enumeration. The Bureau of Corporations discusses investigations of data relating to trusts and similar organizations. The Bureau of Foreign and Domestic Commerce deals with the statistics of exports and imports and summarizes much of the statistical investigation of the Government in the annual Statistical Abstract. The Bureau of Fisheries presents the statistics of that industry. The Bureau of Navigation, figures relating to the merchant marine and wireless telegraphy. The Steam Inspection Service, figures in relation to steamboat inspection and marine accidents.

In the Department of Labor, the Bureau of Labor Statistics compiles and publishes figures of strikes, wages and labor, and certain special reports such as those upon cost of living. The Bureaus of Immigration and of Naturalization discuss the statistics relating to those important subjects. The Children's Bureau compiles figures relating to infant mortality and child saving.

In the Treasury Department, the Life Saving Service collects and publishes the statistics of marine disasters. From the Commissioner of Internal Revenue come figures relating to the production of liquors, tobacco, etc., and this report will soon include the income tax returns. The Director of the Mint presents annually statistics of the production of the precious metals. The Comptroller of the Currency and the Treasurer of the United States offer financial and banking statistics. The Register of the Treasury compiles and publishes the debt statement.

In the Department of the Interior, five bureaus present annual statistical tabulations; the Bureau of Mines, regarding fatalities in coal mines. The Commissioner of Indian Affairs presents statistics of Indians and Indian lands and property. The Geological Survey compiles and publishes extensive statistics of mines and quarries, and mineral products. The Commissioner of Pensions tabulates the returns of pensions paid and the number and location of pensioners. The Commissioner of Education publishes statistics concerning the number and character of schools and concerning school population.

The Department of Agriculture, through its Bureau of Sta-

tistics, is engaged in collecting and publishing reports of cereals and other crops, and also publishes special reports relating to various agricultural products.

The Forest Service publishes statistics of lumber cut and forested areas.

The Weather Bureau publishes figures relating to temperatures and meterological data.

The War, Navy, and Post Office Departments make their contribution to the statistics of the Federal Government. The Signal Corps of the War Department compiles statistics of Government telegraphs and telephones. The Navy Department compiles and publishes important tables dealing with the naval establishment of the United States and the naval militia of the various states. The Post Office Department publishes statistics of post offices, postal routes, and the railway mail service.

The Civil Service Commission compiles statistical tables relating to employment under the Federal government.

And last, but not least, that young giant in the field of Government offices, the Interstate Commerce Commission, now has large divisions engaged in collecting important statistics of express companies, steam railways and telegraphs and telephones.

From this survey you will observe that every department of the Government except the Department of Justice, is actively engaged in compiling some form of statistics. Some of these statistics, however, are what we may term of the negative sort, viz., they are the details of the operations of the department itself; but for the most part they are compilations of new and useful data, made by twenty-nine different bureaus at Washington.

It is difficult to indicate clearly the aggregate number of persons engaged in these compilations, part of which obviously are not continuous. In the Bureau of the Census at Washington are approximately 700 permanent employees, in addition to 700 agents employed in the field to collect cotton statistics. The Decennial and Five Year Censuses require additional force; the bureau of Statistics in the Department of Agriculture employs somewhat less than 200;

the Bureau of Labor statistics in the Department of Labor, approximately 100; the Bureau of Mineral Resources in the Geological Survey about 40; and the Bureau of Foreign and Domestic Commerce somewhat more than 100. Here are nearly 1,200 permanent employees of the government engaged in statistical work in five bureaus of the twenty-nine.

Of all these bureaus we naturally are most interested in that of the Census, the principal collector and compiler of Federal statistics. Moreover, it has been justly claimed that this Association was an important factor in securing the establishment, a decade ago, of the Permanent Census Office. In the last issue of the QUARTERLY of this Association, Doctor Cummings presented an effective review of the operations of the bureau, and described its many and varied activities, but to those of us who participated in its establishment and have watched its progress, there seem to be many things yet to be desired.

The Permanent Census Office was formed from a temporary organization which was unique in its independence of bureaucratic control. The superb achievement of the Director of the Twelfth Census in organizing a temporary bureau, by bringing together experts from all parts of the country, gathering together those who knew from past experience and those who did not know, welding them into a harmonious and enthusiastic whole, and in taking, compiling, and publishing a great decennial census absolutely within the time limit set by law, was an achievement which had not been equalled before, and which, unfortunately, still stands unparalleled. This supreme result was secured primarily because of one central fact: the Director of the Twelfth Census was absolutely independent of every one in the Federal Government except the President of the United States. The truth of the comment which Colonel Goethals sent to the Mayor of New York a fortnight ago, concerning the importance of complete authority is well illustrated by the record of the Twelfth Census. His words are merely a plea for full authority: "Attractive as your offer is, I would be obliged to decline it so long as the present law remains in force by which removals from the police force are subject to review, with decisions based on legal evidence.

In public work of any kind, efficiency can be secured only when the service of those engaged in it is satisfactory to superiors, and while I fully believe in the right of every man to have a hearing, the decision of the superior as to the character of a man's service should be final. In cases," adds Colonel Goethals, "where a man whose services have not been satisfactory can be reinstated by a court of review, the effect on discipline and efficiency is most injurious. It undermines authority, leads to insubordination, tends to destroy the loyal coöperation which the executive authority must have to secure results, and makes his tenure of office impossible."

The taking of the Twelfth Census had been entrusted to a man who shirked no responsibility and possessed untiring energy. It is not surprising that in the preparation and publication of the basic facts of the Census it was a complete success. The Director of the Census made his own appointments; he was unhampered by Cabinet officers, by Civil Service, by department bureaucrats, or by Congress. He drew his employees from north, south, east and west, as he thought best. He expended the vast sum of money appropriated in a lump sum to his order as in his judgment it was advisable. He established the character of the tables and the form of presentation and held his subordinates responsible for prompt production. Even in the printing of his reports, he was not a victim of the Government Printing Office in the ordinary sense, but an independent customer, for he ordered his work produced, scrutinized the bills, complained of overcharges and paid just accounts with his own check upon the Treasury of the United States. There were doubtless defects here and there through that vast system, but it was a one-man power, as it ought to be, and the work was driven forward to splendid completion.

It was this office and this sort of a policy that the permanent office succeeded. The wiser and older members of the Senate and House of Representatives, having learned their lessons from earlier Census experience, realized the need of the one-man power in the Census office, so fraught with emergencies, and they strove to perpetuate in the permanent establishment the favorable conditions prevailing in the temporary office.

Moreover, the Director of the Census who succeeded the Director of the Twelfth Census, fully alive to the importance of maintaining the same independent, aggressive attitude, strove during his entire administration to hold the standing and the prerogative of the Census Office as separate, unique, and to some degree independent of the department. For several years, with varying success, the contest was waged between the Census Office aided by Congress, on the one side, and the bureaucrats of the department on the other, aided by tradition, precedent, and administration politics. The result of the contest was of course not in doubt from the outset. Ultimately the department and politics triumphed and the secret of the failure of the Thirteenth Census to measure up to the temporary Twelfth Census in effectiveness and speed lay in the return to the old bureaucratic methods which had paralyzed and destroyed the activities of the Eleventh and earlier Censuses. All of the small but necessary acts of administration, including those of appointment, promotion, demotion, and dismissal, hung upon the say so of some petty department clerk or official and every time that a minor question of administration on which a Census chief ought to be able to act instantly and emphatically, went to the Department, a mile away, by letter or by telephone, to be bandied about in various divisions, a distinct blow was struck at the authority of the chief and at the enthusiasm and interest of the clerks.

The permanent Census Office contemplated by Colonel Wright, by Mr. Porter, by Professor Willcox, Doctor North, and Governor Merriam, as they pleaded before the Committees of both Houses of Congress for its establishment, was to be an institution fashioned from and preserving the strong, sturdy, and splendidly successful office then in existence. But the Permanent Census Office has actually resulted in a very different affair. In fact it bears only a shadow of resemblance to the organization of a decade ago. The Census Office has in truth become the Bureau of the Census. No unkindly criticism of individuals is here intended. It would be entirely unwarranted. The change here described reflects the conditions which prevail in the Federal

Government, and which, so far as the chances of a single permanent bureau are concerned, cannot be changed. In short, when the strong, lusty temporary office was made into a permanent office, it sacrificed certain important characteristics in return for this privilege. Curiously enough, the distinguished men who advocated the permanent office seem not to have anticipated this result, yet the personal experience of each with the Federal Government had been so extensive that the power of precedent and the eddies of official influence and intrigue ought to have been fully understood and provided for.

Thus far, in our review of federal statistical operations, we seem to have fallen upon two obvious defects, the growth of statistical activity in twenty-nine branches of the Government with the inevitable penalty of wastefulness and duplication, and the sacrifice of some of the independence and authority of the Census Bureau, and hence, in that distinctly emergency-ridden office, the loss of a good share of efficiency,—in return for permanence. Doubtless there are many defects in federal statistical methods, but the two here described are basic in that they reflect federal policy and practice and they will continue to become more serious. I invite your attention therefore to a brief search for a possible remedy.

At the outset, it is important to inquire, whether the two conditions here indicated are equally prominent in the statistical operations of the more important foreign nations.

In Canada, where the science of statistics has become increasingly important to the officials of the Dominion Government, the statistical establishment at the present time is the result of the reorganization which occurred in 1905. In that year the Federal Parliament established the present Census and Statistical Office as a branch of the Department of Agriculture, and charged this office with three general functions:

The Decennial Census to be made in the first year of the Decade, 1911, etc.,

The taking of a mid-censal year census of population and agriculture for the three Northwestern Provinces, and

The prosecution of special intercensal statistical inquiries ordered from time to time by the Minister. These orders

may cover the collection, tabulation, and publication of statistics relating to agriculture, commerce, crime, education, manufactures, vital, and other statistics.

The Census and Statistical office of the Dominion is conducted by a chief officer and three principal assistants, and has a permanent clerical staff of twenty-five, and temporary clerks not to exceed one hundred and seventy. In a general way, conditions in the Dominion reflect on a small scale those which prevail on a large scale in Washington.

The Canadians, however, are not satisfied with the present status of statistical organization in their Government, and in 1912 the Minister of Trade and Commerce appointed a commission to examine into this whole question in order to report a comprehensive system of general statistics in keeping with the demands of the time. This report has already been published and makes many suggestions for improvement, the principal one being the advocacy of a central statistical office for the coördination, unification, and improvement of statistics, the creation of an interdepartmental statistical committee and an inter-provincial conference on statistics. The adoption of many of the suggestions of this commission would obviously mean a great advance for the Dominion of Canada in its statistical organization and product.

In Austria there is a central statistical commission. The work of this Imperial Commission falls into eight divisions:

1. International Statistics.
2. Those of Commerce, the Year Book, and other publications.
3. Of Agriculture.
4. Of societies, corporations, banks, and transportation.
5. Of finance.
6. Judicial statistics.
7. Statistics of Education.
8. Vital statistics.

Several of the Ministries of the Imperial Government prepare some statistical analysis of their own and aid to some extent the Central Commission. Several of the Provinces also maintain statistical offices, but these act in coöperation with the Central Commission supplying it with material.

The Central Commission has existed since 1863 and possesses an exceedingly competent staff.

In Germany, the Imperial Statistical Office has supreme charge of the periodical census and publishes financial, judicial, vital statistics, etc., for the Empire. In a sense, it acts as a clearing house for the other statistical offices which supply the Imperial Office with a large amount of the material used in presenting statistics for the Empire. Each kingdom and principality maintains a separate statistical office concerned with that part of the work of the Empire, which it represents. In addition there are various local statistical bureaus which coöperate in different ways with the Central Office of the Kingdom.

In France, a Central Statistical Office takes the periodical census and its activities embrace not only the collection of population statistics in the entire nation, but a variety of subjects. It works however in full coöperation with the various municipal offices.

In Italy, a Central Statistical Office exists similar to that of France. In Russia, an Imperial Statistical Commission covers the Empire, but it is mostly concerned with the statistics of commerce and finance. In Finland, indeed, which maintains an independent statistical office, the organization and operation of the Bureau is more effective and scientific.

In England, the Registrar General publishes the judicial and vital statistics of the nation, and also has charge of the enumeration of population. Separate from this office is the important statistical machinery of the Board of Trade, having seventeen departments which deal with the statistics of commerce, finance, and similar topics.

All of the smaller countries of Europe now have Central Statistical Offices with permanent and scientifically trained staffs. Those of Sweden, Norway, Holland, Belgium, and Switzerland are highly developed. In all cases where there are municipal and statistical departments in these countries they act as feeders and aids to the Central Office. In short, in Europe and in Canada, progress in the science of statistics appears to be secured by centralization of work, under the most expert direction.

In none of these nations, however, do the problems in the field of statistics approach in importance those which exist in the United States. We have long been regarded as a leader in the development of the science. We have hesitated at no inquiry, we have been deterred by no expense, and we have boasted accordingly. Meantime, other nations, growing slowly and modestly in their statistical operations, have been perfecting their organization in deliberate and substantial fashion. Statesmen as well as statisticians seem in almost all instances to have become impressed with the distinctly scientific character of statistical investigation. In rare instances only have our American presidents and politicians taken that point of view.

With the distinct impression that real progress in statistical work is being made in other lands, accompanied or secured by increasing centralization, we return to the two serious problems in the statistical work of our own Government. These problems appear in a broad way to originate in decreased authority and decentralization, tendencies directly opposite to those shown by statistical progress elsewhere. So significant is this fact that we are justified in asking whether the solution of our problems is not to be found in a reversal of policy. Should we not create an important statistical center in our federal government, which we may here simply term The Office of National Statistics? This new office, to be erected from various small bureaus, ought to be in the semi-independent class, with the Interstate Commerce Commission, the Civil Service, and the Government Printing Office. It should be free from the Department Bureau curse. By its importance and form of organization it should reassume the authority possessed by the temporary Census and lost after securing permanence. It should take over, simplify, and coördinate the more important and expensive statistical work now being performed and often more or less in duplicate by the twenty-nine Bureaus. Lastly, such a large dignified systematic statistical establishment should be wholly scientific, with no trace of politics, should be conducted by a distinguished scientist and administrator with competent aids and complete authority.

I do not suggest a cabinet office to represent this modern

science of ours. It requires no such doubtful honor. All that we of this venerable association demand is better organization and administration, which permit full authority and prompt and scientific results secured without extravagance.

The proposed Office of National Statistics might profitably include at least the following:

The Decennial Census.

Miscellaneous inquiries involving census investigation, such as now supply the intercensal activities of the Bureau.

The present Bureau of Statistics.

Labor statistics.

Statistics of mines and quarries of the Geological Survey.

Statistics of foreign and domestic commerce.

Statistics of the express companies, railways, telephones and telegraphs now collected by the Interstate Commerce Commission.

The statistical work of the Forest Service, of the Agriculture Department, and of the Bureaus of Immigration and of Fisheries.

If wisely administered, measureless are the opportunities of such an office for usefulness, in effectively collecting and compiling the necessary statistics of the Federal Government. Here should be given the time and skill of experts to insure the avoidance of duplication and especially to consideration of the pressing need of simplification. In a decade or two, much of our present Census elaboration, of necessity, will be swept away by mere weight of population. We should begin the study of this problem now.

The present Bureau of the Census has been called frequently a statistical laboratory. Except during a few brief intervals this name has not been justified. A laboratory is a place for analysis and original research, where great discoveries in the scientific world are worked out. The Bureau of the Census may be more correctly called a figure factory. It has tabulated an infinite variety of statistical facts, but it seldom offers anything but raw material.

In the past I have pleaded for a real statistical laboratory in the Bureau of the Census; for an analysis by experts who could take the figures from this or that inquiry and make them tell the story of American life, revealing the changes

which have occurred and pointing unerringly to the changes which are to come. In my opinion, that is the highest scientific function of the Census Office, and in any new and enlarged statistical organization that function should be given great prominence.

Let us not be contented with the creation of a permanent Census Bureau as the great achievement of our three score years and fifteen, a bureau which to the privilege of permanence has sacrificed much of its independence, but let us resolve that so vast have become the statistical activities of the Federal Government that they now demand complete reorganization along the most scientific and progressive lines.

In view of the recent action of our neighbor, Canada, struggling to reform and concentrate her comparativly small statistical activities, and particularly in view of the general movement of the civilized nations toward centralization and toward more effective presentation of statistical material, it is not too much to say that it is time for the United States to bestir herself or abandon her claim to leadership in the science. We should insist on the omission of superflous detail. We should urge more rigid economy, we should punish costly errors, such for example as the Thirteenth Census report on mines which cost hundreds of thousands of dollars and really offered little more than a duplication of figures already published by the Geological Survey. We should insist always upon accurate and prompt production of reports and tables with penalties for failures.

In short, I urge that the goal of this Association in the future should be the creation of a permanent independent central office, to collect, compile, and publish simplified census and other important Federal statistics. With this achievement should come retention of officials who prove to be conspicuously successful, utterly regardless of political affiliations. And, finally, there should here be found in fact as well as in theory, a great statistical laboratory which shall place the United States at the head of the civilized nations in scientific, statistical analysis, and which shall be continually telling the vast, ever-increasing but ever-changing multitudes of old and new Americans whence they came, what they are accomplishing, and whither they tend.

# PRESENT STATUS OF STATISTICAL WORK AND HOW IT NEEDS TO BE DEVELOPED IN THE SERVICE OF THE STATES.*

By Adna F. Weber, *Chief Statistician of New York Public Service Commission for the First District.*

It would be easy and perhaps natural to draw misleading inferences from a merely superficial examination of the available statistics descriptive of the status and progress of civilization in the several commonwealths of the United States. Much of the material is widely scattered and might not be discovered by the casual inquirer. Certain information could be found only in Federal reports; additional information is hidden away in departmental reports and seldom cited in bibliographies, and still other data are published only in legislative documents that go to a very small number of libraries and consequently escape the notice of all but a few special students or investigators. And yet so abundant is the statistical material in many of the more important commonwealths, that a competent investigator or compiler would find no serious difficulty in preparing a statistical abstract that would at least equal in extent and comprehensiveness, if not in accuracy, the statistical year-book of the German Empire or other manuals that are as favorably known. The researches of the Carnegie Institution have brought to light the great mass of economic materials existent in the public documents of commonwealths like New York and other Eastern states.† This material, gathered by the state departments and commissions and by legislative investigating committees, is almost as abundant if not so valuable as that contained in the British bluebooks,—the remarkable series of historical documents that justified Gustav Schmoller of the German historical school of economists in ranking England as one of the leaders of his school of thought. While important investigations are

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†Index of Economic Material in Documents of the States of the United States: New York, 1789-1904. Prepared by Adelaide R. Hasse, 1907.

not likely to escape the attention of the journals of the Statistical and Economic Associations, it remains true that much valuable work is not fully utilized or appreciated, because it remains unknown. Even the index of reports of bureaus of labor prepared and published by the Federal Bureau in 1892 and 1902 has been discontinued.

The most obvious if not the most important need of statistical work in the commonwealths would therefore seem to be a central bureau of statistics and information to collate and compile the statistical information already available, but at present more or less inaccessible. A step in the direction of a commonwealth statistical abstract may perhaps be recognized in the Legislative Manual prepared by the Secretary of the State or other officer for the use of the members of the Legislature and other state officials. Such a manual usually contains statistics of population, wealth (for purposes of taxation), and elections, and might readily be expanded so as to be made a complete statistical year-book, which would embody the final results of statistical research of the several state authorities, and also of the Federal bureaus so far as needed to supplement state activities. The movement toward such a central office of compilation and coördination must be initiated by the learned societies, libraries, and educational institutions, representing the individual consumers of the product. The legislature itself can command information on a special subject from the appropriate state department, and where such information is insufficient, can initiate a special inquiry of its own and for that reason can hardly be expected to take the necessary action unless pressed to it by public opinion.

This conception of a state bureau of statistics differs from the European idea of a central bureau in which is concentrated a large part of the statistical work of the state. The European idea does not commend itself to Americans, who believe that statistics of a special field should be prepared by the authority constituted to supervise that particular field. But it can hardly be doubted that a well organized and equipped office in charge of a general statistical abstract would have a stimulating effect upon the statistical work of the several

state departments. Above all, it would reveal the most serious gaps that might exist in the more general statistical information of the individual states.

A survey of the statistical activities of some of the principal commonwealths indicates that large portions of the field of economic statistics are already well cultivated. In Massachusetts, New York, Wisconsin, and other states we find much progress in the statistics of manufactures, mining, transportation, banking, and insurance. In the field of social statistics we also find much of encouragement in the work of departments of education, health, and charities, including hospitals for the insane. In all of these departments there are now to be found statistical offices that offer permanent careers to trained civil servants. The rapid spread of the movement for workmen's compensation acts also promises needed development in the long neglected field of industrial accidents and diseases.

But in most of the states of smaller resources, statistical work is still in a backward condition, and the same statement applies to certain of the states of large resources. Civil service reform has not yet taken root in all of the commonwealths and needs now, as much as it ever has needed, the support of members of the Statistical Association and other citizens interested in good statistical work. Permanency of tenure for civil servants seems to me perhaps the greatest single need of the states in the development of good statistical work as of other technical work. When we examine conditions underlying the statistical output of a leading state like Massachusetts, we are likely to find the largest single factor to be the long-continued service of bureau or division chiefs. These men may have entered the service without having qualified in competitive examinations, but they have retained their positions through successive administrations despite party changes and have acquired in office the necessary statistical training. To insist upon extensive statistical training as a prerequisite to employment in the statistical service does not seem to me to be necessary. While I have always favored a high standard of education and have in fact sometimes endeavored to set the standard as regards scholastic attain-

ments higher than the Civil Service Commission was willing to establish it, I have always sought to obtain men who had had indeed a good academic training, especially in economics, but had also demonstrated their ability to do original work, whether in statistics or any other field. A very considerable number of young men who entered the civil service of New York through such examinations in the past fifteen years now hold responsible positions in the statistical offices of the various state departments or of private corporations. It may be of interest incidentally to note that in this period the average salary of a statistician in the state service has increased 30 or 40 per cent. The time seems to be near at hand when the statistical service can offer as attractive inducements to young men of promise as does the law or engineering. This is especially true of work that combines accounting with statistics, for such a combination of experience is coming to be highly appreciated by the large corporations.

The movement for "efficiency and economy" in public business may be explained in part as an outgrowth of the efficiency engineering idea developed in private business, but it owes its origin in part at least to the work of organizations like the Bureau of Municipal Research, which is carried on by investigators trained in statistical as well as accounting methods. The movement is therefore to be recognized as one that should react favorably upon the statistical work of the commonwealths relating not to the transaction of public business (*e. g.*, the "budget") but to the recording of social and industrial phenomena of the entire body politic.

If accountancy is to be regarded as a branch of statistics, we must also grant recognition to the statistical work done by engineers, not only in the development of business efficiency but also in the development of public policy concerned with public service corporations. In the past decade, engineering firms have been called upon to make exhaustive studies of the street railway situation in several of our large cities and in their reports they have to a large extent applied the statistical method. An excellent example of such statistical work is afforded in the recent report of the Rapid Transit Commissioner of the City of Philadelphia. If work of like character has not

already been done for commonwealth governments, it may be looked for as a development of the early future. The need for special investigations of broader scope than those carried on by permanent bureaus or departments will from time to time bring about the establishment of special commissions that will require expert investigators, and it will be the duty of members of the Statistical Association to use their influence in favor of the adoption of the best methods of investigation on the part of such commissions. Three recent New York reports—on Industrial Accidents, Unemployment, and Factories—are excellent illustrations of the results that may be achieved by the combination of the regular staff of state bureaus and a staff of special investigators temporarily employed by the commissions. Such results would not have been attained had not members of this Association and similar societies, like the Economic Association and the Association for Labor Legislation, taken an active part in the movement for the establishment and organization of the commissions.

In the next few years there will in all probability be movements started in the different commonwealths for the reorganization of state departments which carry on more or less statistical work, and the statistical societies, it seems to me, should at such times coöperate actively with the profession most directly interested in such reorganizations. The New York City branch of the Association at a recent meeting voted to memorialize the city government in favor of the adoption of the recommendations of a special committee of medical men for a reorganization of the department of health, designed, among other things, to secure an improved system of registration of vital statistics. The lawyers in many states are now actively supporting a revision of judicial procedure, including among other things, better records of crimes and torts. The defects of our judicial statistics are nearly everywhere so serious that a reform movement of this kind should also enlist the coöperation of members of the statistical society.

It seems unnecessary to continue further in the enumeration of the special subjects that most need improved statistical methods. It should suffice to refer to the continued existence of a need, in the commonwealths as elsewhere, for the occa-

sional special commission as well as the permanent bureau, and the interdependence of the one upon the other. If the special commission can obtain from the permanent bureau statistical material of a high degree of accuracy and comprehensiveness, it will be able to carry its pioneer work along new lines so much the farther. And the higher its achievements in advancing the limits of our knowledge, the greater will be the effort of the permanent bureau to hold and maintain the advantage.

# STATISTICS IN THE SERVICE OF THE MUNICIPALITY.*

By F. Spencer Baldwin, Ph. D., *Professor of Economics, Boston University.*

It would be superfluous to take the time of this audience for an extended preliminary dissertation upon the need of applying statistical methods to the study of municipal conditions and activities. The members of this Association do not need to be told that the rapidly increasing concentration of population in large cities, the alarming growth of municipal expenditures and indebtedness, and the widespread prevalence of inefficiency, wastefulness, and corruption in the government of American municipalities constitute a problem of the first magnitude for American democracy.

At the present time about one third of the total population of the United States is found in cities of over 30,000 inhabitants. The total governmental costs of the 195 cities of this size amount to nearly one billion dollars, as contrasted with expenditures of roundly six hundred and fifty million dollars by the National government, and less than two hundred million dollars by the state governments. The total indebtedness of these cities approaches closely to the three billion dollar mark, or sixty-nine dollars per capita, as against one billion dollars indebtedness, or eleven dollars per capita, for the National government. Moreover, population, expenditures, and indebtedness are all increasing in the cities at a much faster pace than for the nation at large. These figures emphasize sharply the urgency of careful statistical inquiry into the conditions created by municipal expansion.

I shall discuss this subject from the point of view of American conditions and experience, with special reference to the city of Boston. It may not be inappropriate in this connection to remind the members of this Association that Boston has led the way and set the pace in the development of statistical

* Paper read at the seventy-fifth anniversary meeting of the American Statistical Association, Boston, Mass., February 14, 1914.

service in American municipalities. The first adequate and scientific city census taken in this country was the Boston census for the year 1845, taken under the direction of Mr. Lemuel Shattuck, one of the founders of this Association, who introduced new and improved methods of enumeration and tabulation. His report, published in 1846, is a genuine statistical classic. This Boston census of 1845 was confessedly so superior to any previous census that Mr. Shattuck's advice and assistance were sought by the United States Census Board in 1849, in preparing the schedules for the seventh census of 1850. Five of the six schedules used in that census were designed and prepared principally by Mr. Shattuck. Thus, in certain important respects, the city of Boston showed the Commonwealth of Massachusetts and the United States how to take a census.

I may, perhaps, be pardoned for mentioning here the further fact that Boston was the first city in this country to establish a municipal statistical department. The Boston Department of Municipal Statistics was created in 1897, at the instance of Mayor Josiah Quincy. It was designed to serve as a non-political scientific bureau, for the compilation and publication of municipal statistics, and it has been consistently maintained on this plan, notwithstanding assaults by unappreciative or apprehensive politicians. This, I submit, is an achievement of no mean order, especially in view of the failure to maintain similar departments established in New York, Chicago, and Baltimore.

In considering the question of what service statistics can render to the municipalities, it will be well first to review what has already been done in this field, and then to inquire into the possibilities of further extension and improvement of the work. The development of municipal statistics in this country has followed four main lines:

1. Collection and publication of financial statistics of cities by the National government;

2. Investigation and supervision of municipal finances by State governments;

3. Compilation and publication of financial and social statistics of cities by municipal departments of statistics;

4. Inquiry into municipal departments and conditions by bureaus of research under private management.

1. A beginning was made in the collection and publication of municipal statistics by the National government in 1899, when the first annual report on the financial statistics of cities having a population of over 30,000 was issued by the Department of Labor, under authorization of an Act of Congress. Then in 1902, when the census bureau was placed on a permanent basis, the compilation of these statistics was transferred to that bureau, and reports on the financial statistics of cities of over 30,000 population have been published each year from 1902 to 1912. The number of cities covered by these reports has increased during the period from 146 to 195. It was expected, when the collection of municipal statistics was first undertaken by the National government, that the information could be gathered on schedules sent out to be filled in by the local officials. But on account of the unsystematic and divergent methods of municipal accounting and reporting in vogue throughout the country, this course was found to be impracticable, and it became necessary to send out field agents to secure the information on the ground.

It deserves to be noted that the method of tabulation and presentation employed in these reports conforms in general to a scheme devised by the Committee on Uniform Municipal Accounting and Statistics, of the National Municipal League, established in 1901, which did valuable pioneer work in this field. This committee made five annual reports in the period 1901–1905, and its members contributed twelve papers to the proceedings of the League. Dr. Edward M. Hartwell, secretary of the Boston Department of Statistics, was its chairman. Because of the chaotic condition of municipal statistics, the committee confined its work almost exclusively to matters relating to accounting and finance. The committee put forth a series of schedules which came to be known as the Uniform System of the National Municipal League. The characteristic feature of these schedules was the grouping of departmental receipts and disbursements under about a dozen general heads, for example; General, Government, Public Safety, Public Works, Public Debt, etc., according to the functions subserved

by the several departments of city government as they were then organized. The Committee was instrumental in stimulating discussion by accountants and fiscal officers of the principles of accounting and of measures calculated to promote reasonable uniformity in city bookkeeping. The National Municipal League's schedules constituted, in effect, a model comptroller's or auditor's report. In accordance with the schedules, the annual financial reports of various cities were restated in print, to show how the group system of uniform rubrics would work out in practice. Thus the League's schedules were utilized in fiscal reports of Newton, Mass., for 1900, Boston, 1900 and following years, Baltimore, 1901 and 1902; Chicago, 1902, Minneapolis, 1903, and Duluth, 1905.

2. In the field of investigation and supervision of municipal finances by state governments, two different plans of action have been tried. One is the compulsory method of Ohio, which in 1902 introduced a uniform system of municipal accounting, under the control of the state auditor, with the power to prescribe forms of fiscal reports for all cities. The other is the educational method of Massachusetts, as it may be termed. Instead of installing at once a uniform municipal accounting system throughout the Commonwealth, the Massachusetts legislature passed, in 1906, a law requiring auditors of cities and towns to furnish annually, on blanks prepared by the Bureau of Statistics, statements of revenues, expenditures, and indebtedness. The first report on Comparative Financial Statistics of Cities and Towns in Massachusetts for the year 1906 was issued by the Bureau of Statistics in 1908. The compilation of these statistics disclosed difficulties arising from the lack of uniformity or system in handling receipts and disbursements, and of proper methods of accounting on the part of the cities and towns. The result of the findings of the Bureau was the legislation of 1910, requiring notes to be issued in forms prescribed by the director of the Bureau of Statistics, and to be certified by him; also providing for the appointment of city and town accountants and for the installation of improved systems of accounting, with auditing by the director of the Bureau of Statistics,—upon the acceptance of these two provisions by the municipality. This pioneer work bore

gratifying results in the awakening of municipal authorities to the importance of adopting modern methods of financial administration.

In 1911 the Bureau of Statistics was ordered to investigate the indebtedness of cities and towns against which no sinking funds were in process of accumulation, or for the extinguishment of which no annual payments on the principal were being made. The Bureau made two investigations,—one a partial and preliminary inquiry, the other complete and exhaustive,—and reported its findings with recommendations. The investigations were supplemented by further inquiry through a legislative committee. The recommendations of the Bureau were finally embodied in the important legislation of 1913, which includes sixteen Acts relating to municipal finances. The most important of these is the Act relating to municipal indebtedness, which supplanted the old law of 1875. This Act was aimed at four evils: first, incurrence of funded or fixed debt for current expenses; second, temporary borrowings to an unlimited amount, in anticipation of tax collections; third, diversion of the principal of trust funds to current expenses for unauthorized objects, and incurrence of other liabilities without proper provision for payment; fourth, neglectful and costly management of sinking funds.

This legislation is a notable example of scientific law-making by application of the statistical method. The director of the Bureau, Mr. Charles F. Gettemy, who deserves great credit for the success of this experimental undertaking in state investigation and supervision of municipal finances, well says: "The true method of undertaking to accomplish a reform of long-standing evils should be, in my judgment, by a preliminary, scientific diagnosis of conditions, and I doubt whether any state can show an instance of legislation more thoroughly pre-digested, if I may use the term, than that which, without a dissenting voice in either branch of the legislature, has just been placed upon the statute books of Massachusetts for the purpose of restricting and regulating the incurrence of municipal indebtedness in accordance with sound financial principles."

3. In the establishment of statistical bureaus, as branches

of the city government, only a very small beginning has been made in this country. The field of municipal statistics proper remains in the United States a barren and neglected one. Boston led the way, as has been stated, establishing a department of statistics in 1897. The example of Boston in this respect was followed by New York, Baltimore, and Chicago, but the statistics departments in these cities were short-lived. Baltimore now has a municipal reference library, which performs some of the functions of a statistical department.

The Statistics Department of the city of Boston is in charge of a board of five trustees, appointed by the Mayor for a term of five years. The work is under the immediate direction of a secretary, Dr. Edward M. Hartwell, who has served the Board most efficiently from the beginning. The work consists in furnishing statistical information for use by the Mayor and heads of departments, answering inquiries of citizens of Boston and others parties, serving as a bureau for the exchange of documents with the principal cities of this country and Europe, and issuing regular and occasional statistical publications. The publications include: first, the Municipal Register, or hand-book of the city government; second, the monthly Bulletin, now published quarterly, containing tables grouped under twenty-two general heads, showing movement of population, work of city departments, statistics of the port of Boston, and other matters; third, a series of special publications relating chiefly to receipts and expenditures. In 1898–99 and for four months in 1900 a City Record was published weekly by the Statistics Department, but its issue was suspended through the refusal of the legislature to make the City Record self-supporting as the official gazette of the city government. Since the revival of the City Record, through the adoption of the new charter in 1910, the publication has been self-supporting, the editor being appointed by the Mayor. The Statistics Department has made many special studies, at the instance of the Mayor and Council, and heads of departments, which are too numerous to mention. Certainly the publications of this Department in the past fifteen years will bear comparison in point of variety, volume, and scientific method with those of any other city in this country.

4. The fourth line of statistical activity in the municipal field is represented by the well-known work of the New York Bureau of Municipal Research. Bureaus of municipal research have also been established in Philadelphia, Cincinnati, and Chicago. In Boston a Bureau of Municipal Research has been installed by the Finance Commission as an adjunct to its organization.

The New York Bureau was incorporated in May, 1907, its objects as stated in the charter being "to promote efficient and economical municipal government; to promote the adoption of scientific methods of accounting and reporting the details of municipal business, with a view to facilitating publicity in matters relating to municipal problems; to collect, to classify, analyze, to correlate, to interpret, and to publish facts as to to the administration of municipal government." The Bureau was placed under the direction of William H. Allen, Henry Bruére, and Frederick A. Cleveland. The methods of the Bureau are, in brief, to confer with officials responsible for the municipal department or conditions to be studied and secure their coöperation; to study the organization and distribution of powers and duties in the department; to examine the records of work done and the cost in the case of each official, each branch, or each class of employees; to coöperate with department heads in devising remedies through a change of system, without touching the personnel of the department directly; to present a formal report to the department head, the city executive officials, and the public, with description, criticism and suggestion; to follow up the first report in the press and through all agencies of publicity until results are secured.

Among the notable accomplishments to be credited to the Bureau may be mentioned: the removal of an incompetent Borough president by the Governor, upon evidence furnished by the Bureau; reorganization of the department of finance, with improved methods of inspection, audit, and payment; accounting reforms for all city departments; budget reform, exhibits, publicity; establishment of a Bureau of Child Hygiene in the Department of Public Health; changes for economy and efficiency in various departments; creation of the Herman

E. Metz National Fund for Promoting Efficient Municipal Accounting and Reporting in American Cities; establishment of a National Training School for public service, under the direction of the Bureau.

The New York Bureau has made a notable record for varied and strenuous activity. Its numerous reports and pamphlets make strong appeal to popular attention through skilful and forceful presentation of facts. It has done admirable service in the education of public opinion and the promotion of intelligent and vigilant citizenship.

In the light of this survey of accomplishment, let us next inquire in what ways the service rendered by statistics to the municipality can be extended and improved.

1. The municipal statistics collected and published by the National government through the Bureau of the Census are excellent, so far as they go, but they do not go far enough. The scope of this work should be extended to include social statistics of cities. Previous reports contain little more than statistics of receipts, expenditures, and indebtedness. Acknowledgment should be made of the fact that the reports for the years 1902, 1903, and 1907 contain some tables relating to other branches of municipal statistics besides financial statistics, for example: statistics relating to the organization and work of the police and fire departments; retail liquor saloons and licenses; water and sewerage works; resources and patronage of public libraries; length, area, construction, and care of streets; disposal of garbage; milk and dairy inspection; mortality statistics; and public school statistics. The last report for 1912, however, gives in addition to financial statistics, only figures of area, estimated population, and school attendance. The financial statistics, moreover, are less comprehensive than those contained in previous reports. General tables, such as those just mentioned, are conspicuous by their absence. It would seem that the Bureau of the Census ought to attempt, once in five years, to enlighten the public on other branches of municipal statistics besides those relating to financial administration.

It is greatly to be desired that the National government should issue a publication as comprehensive and detailed as

the Statistisches Jahrbuch Deutscher Städte. The nineteenth issue of this publication is edited by Professor Doctor M. Neefe, Director of the Statistical Office of Breslau, in collaboration with thirty-two experts occupying similar positions in other German cities. This issue of the Year Book embraces thirty-one special articles, covering 859 pages of text and comparative tables, mostly upon subjects quite beyond the ken of our municipal statisticians, for example; movement of population in 1910; building operations and dwellings; market in 1910; saving banks in 1910; the business of hotels and inns in 1907, 1910, and 1911; industrial tribunals in 1909 and 1910; passenger traffic in 1910, including omnibus, cab, and street-car traffic, as well as railroads and waterways; postal, telegraph, and telephone traffic in 1910 and 1911. Comparison of the nineteenth with the ninth issue of the Year Book shows an increase from 373 to 859 in the number of pages, from twenty-five to thirty-one in the number of special articles, and from nineteen to thirty-two in the number of Doctor Neefe's collaborators, who represented sixteen different German cities in 1901 and twenty-four in 1913.

2. A similar extension of scope is desirable in the case of the state publications of municipal statistics. Here, again, the reports contain only financial statistics. The need of extension to include social statistics is appreciated by the Director of the Massachusetts Bureau of Statistics. He is of the opinion, however, that this larger undertaking must be deferred until the work of collecting financial statistics shall have been put on a satisfactory basis. Concerning the further development of the statistical service rendered by the state to the municipality, he remarks: "In view of the laxity with which municipal accounts have hitherto been kept, we shall be accomplishing a good deal when we are able to show what our cities and towns are spending and the functions for which the expenditures are made; but it is, of course, of the utmost importance that we finally undertake to show what the people are getting for their money. When we have shown, for example, on as comparable and uniform a basis as possible, what our cities are spending for highways, we have done something; but mere statistics of expenditures, at best, tell only half the story, for

what a city ought to spend on highways is not reflected by the ledgers, however accurately and properly the accounts are kept. Some day, I hope, we shall be able to correlate with the expenditures for highways, statistics of mileage with a classification of costs based upon different kinds of pavements, etc., also to compare the expenditures for education with the number of pupils attending the schools, the aggregate amount spent for school teachers' salaries with the actual number of school teachers benefiting therefrom, and so on all down the line."

3. The first step in extending the statistical service rendered by the municipality to itself is obviously the establishment of a permanent non-political statistical bureau in every large city. On the continent of Europe, municipal statistical offices abound. The best organized and most efficient departments are found in those cities in which the problems of modern urban life have been met most successfully; for example, Berlin, Paris, Liepsic, and Vienna. In 1913, forty-six German cities having an aggregate population of 13,437,388 had statistical offices; those of Bremen and Berlin established in 1861 and 1862, respectively, are the oldest. Twenty-two of the whole number, or 48 per cent., have been established since 1900. In contrast with this extension of municipal statistical service in Europe, the field of such service has been neglected in the United States, because the majority of those who control the purse and administer the affairs of American cities are too short-sighted to devise appropriate methods or too supine and parsimonious to provide ways and means for cultivating the field.

The usefulness of a municipal statistical office can be increased in various directions beyond any results thus far achieved in an American city. One way to utilize such a department more effectively is to give it editorial supervision over the statistical work of other departments. There is great need of expert direction of the methods of recording and reporting statistics in the various departments of municipal government. The statistics of municipal administration need overhauling at the source. A vast amount of statistical rubbish is yearly dumped into print. The really valuable information is often presented in such crude fashion as to be mean-

ingless until worked over and shaped up properly. Dr. E. M. Hartwell makes the following pertinent comment on the existing methods of statistical presentation: "Municipal reports teem with tabular presentations of clotted facts. Too often they are ephemeral by-products of the administrative machinery. As raw material and a reminder of what is desirable, they often have some value, a value which is seldom proportionate to the cost in labor and money of separating the ore from the dross and refining the pig-metal till it becomes malleable and ductile." The duplication and confusion in department statistics could be eliminated by giving the statistical bureau authority to prescribe or recommend methods of statistical treatment.

Another opportunity of added usefulness for municipal statistics departments is through systematic coöperation with commercial, civic, and other organizations. The statistical service should be made widely valuable to the citizens at large. The possibilities in this direction are illustrated by a report prepared by the Boston Statistics Department for use in the recent movement to secure a regional bank for Boston. The report showed in a graphic way the large role played by Boston in the industrial, commercial, and financial activities of the nation, and the statistics made a most effective argument for the location of one of the regional banks in the city.

Finally, a municipal statistics department should assemble and publish in fairly compact and properly intelligible form the salient facts and figures concerning all the varied activities of the municipality. The municipal year-book should give a comprehensive picture of the life of the city in its essential phases. In this respect American municipal statistics fall far short of the state of the art as represented by the output of the average city statistical office on the continent of Europe. Indeed, no city in the United States publishes a year-book that will bear comparison as to diversity and comprehensiveness of contents and scientific presentation of data with the municipal year-book of the city of Tokio, Japan. The municipal year-book in an American city should be the source from which the citizen could get the facts about the food supply, the transportation system, the city markets,

street cleaning and paving, garbage collection and all other details of municipal housekeeping; the schools, parks, baths, playgrounds; the port, docks, terminals, freight movement; the banks, trusts companies, stock exchange; the churches, charities, hospitals, agencies of poor relief, and organizations for civic and social betterment; the hotels, theatres, clubs, and recreational institutions; the courts, jails, and reformatory agencies; the figures of births, deaths, sickness, accident, unemployment, and so on;—in short, all the multiform activities that make up the life of that extraordinarily interesting social organism, the American city. A year-book of this scope would be of invaluable assistance to officials, students, editors, publicists, social workers, and all persons interested in municipal affairs.

4. It is not possible to suggest any general program for the privately endowed and controlled bureaus of municipal research. This work must shape itself according to the concrete conditions and problems of the municipality in question. There is real need and place for such a bureau, to supplement the work of a regular statistics department in the city government. The latter as a coördinate branch of the municipal organization cannot investigate and criticize the other departments without imperiling its influence and even its existence. A bureau of municipal research supported by private contributions is not trammeled in this way. The rôle of such a bureau, however, is a peculiarly difficult one to play, for the way of the reformer or informer is often as hard as that of the transgressor. It is not easy for a research bureau to escape a reputation for chronic fault-finding and constant scolding. The temptation is to make too much noise at too frequent intervals. The directors of such work should bear in mind that constant barking dulls the public ear. The president of one of the most successful commercial organizations in this country recently said to me in commenting upon the proper policy in advertising: "Never yell unless you have something to yell about, and then yell like ——." This would make a good motto for a bureau of municipal research.

In general, finally, the chief need in the development of municipal statistical service in this country is extension and

coördination all along the line from the national to the local service. The various branches of this service, now independent and unrelated, must be brought into some sort of coherent connection. It is only when this service shall have been systematized and correlated thoroughly that statistics can render the full measure of possible usefulness to the municipality, for the general information of the citizens, the prevention of waste and corruption, the promotion of efficiency and economy, the scientific guidance of reform movements, and the effective advancement of the cause of municipal betterment.

# THE PRESENT STATUS OF STATISTICAL WORK AND HOW IT NEEDS TO BE DEVELOPED IN THE SERVICE OF PRIVATE SOCIETIES AND ORGANIZATIONS.*

By W. S. Gifford, *Statistician, American Telephone and Telegraph Company.*

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At this seventy-fifth anniversary of the founding of the American Statistical Association, I feel that perhaps it is bad taste, if not presumptuous, for one who has been a member only a comparatively short time, to call the Association to task for its present shortcomings and to offer suggestions as to what it ought to do in the future. However, not being in a position to talk with first-hand knowledge about the Association's past achievements, I may be forgiven if I speak out freely on a matter on which I have firm convictions and which I consider of vital importance to us all.

It is not my intention to define statistics or to state at just what point mere information or accounting ceases to be mere information or accounting and becomes statistics. That we must have knowledge or information to carry on any undertaking is obvious. That this information is today more and more frequently reaching such proportions as to be classed as statistics is perhaps not so obvious. I believe, however, that this lack of recognition is not due to any difficulty in proving that these accumulations of facts are properly statistics, but to ignorance of the present extent of such accumulations by private organizations.

Statistics, other than those compiled by governments, have been of comparatively recent development. Large private enterprises, somewhat resembling governments in their administration and organization, have developed rapidly in recent years in industrial, philanthropic, and academic fields. The very factors that have made them possible have also

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made possible private statistical work on a large scale. These private statistical undertakings heretofore would have been too expensive unless they could have been backed by the power of the government to enlist the aid of society as a whole, as has been the case in government statistical work. Now, however, statistics are both a possibility and a necessity. With the increased facilities for transportation and communication, resulting in the practical elimination of distances, large organizations supplant small organizations and increase the need for collective facts or statistics. Furthermore, the development of machinery and mechanical devices (such as tabulating and sorting machines) have aided private statistical work. In fact, private statistical work can now rival that of the government in many respects.

The incentive or motive for private organizations in such work is, it is true, usually selfish, while government motives are considered more altruistic. On the other hand, private undertakings are apt to be more logical and more suited to definite and practical needs. Statistics, even though compiled with a selfish motive, are entitled to consideration if they present the truth, and no private undertaking will intentionally expend time and money to compile data that will not present the truth; nor will it intentionally set up its facts in a manner that will be misleading to itself, whatever it may do in presenting such facts to others. In other words, a private society, if it is intelligently managed, is just as much interested in getting honest statistics as a government, and if those statistics are then presented with a view to mislead others, the society is dishonest and those responsible may justly be looked upon as liars.

We ought, therefore, to expect to find good statistical work in private fields today, and yet I know of nowhere to get much real information on this point. It seems a matter that has been sadly overlooked. I have tried to get a little light on the present extent of such statistical work with the feeling and hope that such knowledge will stimulate interest in statistics outside of government fields.

There are today hundreds of large business concerns, including almost every conceivable kind of public service corporation,

manufacturing and mining industry, wholesale and retail mercantile houses, and insurance companies, that are engaged in statistical work of more or less importance. True, much of the work is localized or special, but none the less of statistical value. In some cases, the men in charge of the work hold the title of statistician and are equipped with special training and experience, ranking as officers of the corporation with large well organized departments. In others, the work is in charge of men without special training who have been pressed into the service from the accounting or clerical ranks. We all know something of the statistical work done by railroads, as much of it is required by the Interstate Commerce Commission; but I doubt, for instance, whether we are aware of the vast amount of information as to internal movement of commodities in the country which can be obtained from data available in the offices of the railroads.

The statistical work done by some of the large electric light and power companies has been of high grade. A great deal of information gathered for use in developing and administering the business, such as classes of customers or amount of current consumed, provides statistics on the character of population of cities, etc., which should prove interesting to the statistician.

Extensive development studies of telephone companies in various cities provide valuable data as to the probable future growth and spread of the population in the cities. This data is compiled in elaborate detail in order that plant may be properly laid out to take care of the population twenty years hence. It is obtained by a complete house-to-house study of the entire city.

Records of employees of large corporations, although a field which has not yet been developed to any marked degree, present another source of valuable statistical information. There are today two hundred or three hundred large corporations which have some sort of accident disability, sickness disability, pension or death benefit plan. These corporations probably employ considerably over a million wage earners and these wage earners, with their families, would constitute quite a respectable portion of our total population. Ultimately,

in connection with these welfare plans, information that has never been secured before by government inquiry will be obtained about employees.

The statistical work done by some large firms, to determine the results of their different kinds of advertising or the results of the same advertising in different parts of the country, might throw some light on the psychology of society.

In addition to these business enterprises, and closely allied with them, is the statistical work of such trade associations as the Chamber of Commerce of the United States whose purpose, among other things, is to furnish members with up-to-date information obtained as the result of extensive research and compilation of statistics of various sorts.

The Copper Producers' Association publishes regularly a report upon the stocks of copper on hand and the production and consumption of copper.

Again, there are such enterprises as Babson's or Brookmire's which compile and publish statistics on business and financial conditions. Statistical bureaus, such as the Bureau of Railway Economics, are maintained by associations of railroads or other enterprises. There are Trades Unions, the National Bankers' Association, the National Consumers' League, the National Civic Federation, and numerable other agencies busy with statistical compilations. So much for a hurried survey of the present statistical work in business and its allied fields.

In addition, we have large social enterprises, such as the Russell Sage Foundation, the National Education Board and the Carnegie Foundation, which are undertaking elaborate statistical surveys, and there are investigating commissions of various sorts, some organized by the government and some by private initiative, but all of which collect statistical data.

I have not even mentioned the statistical work of the biologist, the eugenist, the doctor, etc. We even have elaborate statistical compilations in the field of sports, such as baseball and football.

I have not tried to do more than give a rough sketch of the present ramifications of statistical work in private organizations and societies. We only need to look at a daily newspaper to realize that people are today more and more relying

on statistics and facts to prove their points. To tell the truth, it would seem at times as if we were attempting to prove too much rather than too little by statistics, particularly as our statistics are by no means always scientifically correct. So far as the public is concerned, government statistics by no means monopolize the field.

As to the future of this tremendous private work, which is at present in somewhat of a chaotic state, I would like to make a few suggestive statements.

The work is still in its infancy and will, of necessity, grow rapidly in the near future. What restrictions or rules are there to prevent it becoming more chaotic, more inaccurate and misleading? No laws protect the public from being misled by false and inaccurate statistics. Rather than let the work develop in chaos along these unscientific lines, why should not the American Statistical Association make determined efforts to interest such people as are engaged in this private statistical work? Why should it not build up an association of *all* statisticians? By developing a certain professional code as well as practical rules and regulations, inaccurate statistics can be branded as untrue and their sponsors can be severely censured. Statistics will not, it is true, in themselves, solve all the problems in the world—in these problems the whole is always greater than the sum of the parts, but statistics have an increasingly important place today in the future development, both of the people of this country and all the countries in the world.

Why not recognize the statistical work of private organizations and societies and place it, so far as professional standing is concerned, alongside of government work and out of both obtain a larger truth.

The idea that the statistics of private enterprises are "trade secrets" is fast becoming obsolete, partly through necessity caused by government regulations and enforced publicity, and partly through the adoption of broader and more generous ideas.

The American Statistical Association, after seventy-five years of honored and respected existence, now faces the fact that it recognizes probably not much more than half of the

statistical work being done in this country. I feel very strongly that if, twenty-five years hence, it wishes to look back with pride to its accomplishments, it must take immediate steps to become an aid and source of inspiration for *all* interested in arriving at truth through statistical data, whether they are engaged in work under the government, in academic circles, or in private societies and organizations.

# A NATIONAL BUDGET.*

By Harvey S. Chase, S.B., C.P.A.

It must be remembered in discussions concerning the national budget that there are, necessarily, two viewpoints which are quite distinct. One of these is the *inside* viewpoint and the other is the *outside*. One is the viewpoint of Congress and of the executive departments; the other is that of the intelligent citizen and of the economist interested in governmental finance.

Both viewpoints must be provided for in a complete national budget. The first requires that the "estimates" (proposed expenditures) shall be classified according to *units of organization, i. e.*, the departments, divisions, and establishments which are to spend the appropriations. The second requires that the estimates be classified according to *purposes* of expenditure (*functions* of government), irrespective of the title of the department or division which is to spend the money.

The great difficulty heretofore in budget consideration has been the attempt to condense these two viewpoints into one, and to set up only a single classification. With such a classification, if arranged by organization units, the outsider (citizen, or economist), can get little information concerning expenditure for *purposes*. If, on the other hand, the classification is made according to purposes and functions, than the average congressman is likely to claim that he can not make head or tail out of it so far as appropriations and legislative requirements are concerned.

This situation being acknowledged and the reasons for it perceived, it becomes evident that the budget compiler should provide *both* classifications, that is to say, the same total figures should be arranged in two detailed systems, one for the insider and the other for the outsider. Such double classifications are provided herein.

*Based upon the Estimates for the new Fiscal Year (1915) beginning July 1, 1914, which were submitted to Congress by the Secretary of the Treasury, December 1, 1913.

As the present statement is intended to illustrate the needs of the outside intelligent citizen rather than that of the inside official of the government, I have placed the functional analysis first and the organization analysis second.

## The Relationship between "Revenue" and Expenditure."

All government expenditure must ultimately be met by revenue and by revenue only. The issuance of bonds or other evidences of debt is merely a temporary expedient—in sound financing—and the payment of these debts must come from *revenue, i. e.*, from surplus revenue devoted specifically to this purpose.

All nations with responsible ministries provide revenues for their respective governments by means of budgets. The finance minister prepares estimates of the needed expenditure in summary and in detail. He submits these estimates to the legislative body or bodies, together with estimates of revenue, also in summary and in detail. He balances these, one against the other, increasing taxes in number or in rate, if more revenue must be had; or cuts expenditure estimates if taxes cannot safely be increased—whether for political or economic reasons.

The central feature of the budget is this balance of revenue against expenditure. It is the primary necessity in nearly all national finance. It is the danger signal and the rallying point for the opposition to a party or a ministry.

In the United States, we have not had this fundamental requirement of national finance for many years, mainly because of the phenomenal growth of our wealth and our population, and because our taxes have been principally *indirect* taxes—custom duties, established for purposes of "protection." Revenue has not been dependent, therefore, upon expenditure, with corresponding direct taxation as in most other nations. On the contrary, revenue has been produced incidentally, as it were, and usually in excess of the amount needed for economical and efficient administration. Hence our extravagance as a nation; hence our public building bills; our rivers

and harbors' acts; our inefficient civil service, our "pork barrels," and our contempt for economies and economics.

This indirect revenue is one of the reasons why this country has never had a budget and yet has gone on from year to year growing ever more wealthy, ever more extravagant, and ever more contemptuous of budgetary requirements and of the financial methods of foreign nations. Now, in 1914, we are beginning to be pulled up with a round turn. Now, with our tariff reforms and our income taxes, we are departing sharply from the ways of the fathers. Moreover, in our private business competitions, we hear and join in the slogan of "efficiency," which tends to dominate the activities of business of the present day. It is creeping into governmental methods likewise; into our cities and our states,—witness "commission government" in cities, and note "university extension" in state affairs; into our national departments—witness the demand for cost accounting and for uniform classifications of expenditures. What do these developments mean? What do they portend? Evidently an approach to a closer balance between revenue and expenditure, to an increased attention to this relationship, and to a sharper critical demand for efficiency—which necessarily includes economy—in government expenditure. In other words, it portends the approach of the budget and budgetary methods in national finance in this country, as in other countries.

### The First Step.

The first step must necessarily be the broadest step, if not the highest. This step is outlined in the exhibits and explanations which follow. This step is practicable, and should be taken promptly. To illustrate it, suppose that the President is about to submit to Congress and to the public his annual message at the beginning of the session. He has, we will say, adopted the budget idea and has prepared a message supported by tables of figures based upon estimates of proposed expenditures and estimates of expected revenues furnished to him by his cabinet officers and the heads of the government establishments. These estimates have been prepared in two ways. First, in the ordinary way, as required by present legislation.

Secondly, in a new way, arranged in logical order and intelligible sequence, grouped by purposes or functions of government, and segregated by character of expenditure, whether for current expenses or for capital outlays and for subdivisions of each. The revenues, too, have been carefully calculated and compared with other years, due allowances have been made, non-revenue receipts eliminated, trust funds and trust income separated, all remaining revenue concisely classified, and the available total determined. The President, with the advice of his Cabinet—and probably with the assistance of a "central administrative accounting bureau"—has prepared these estimates of revenue and of expenditure in budgetary form. He has struck a balance. He has accepted the anticipated result, whether it be a surplus of revenue or a deficit. If the latter, he has considered methods of providing for the deficit. With these data before him, he constructs a budget as follows: He sets up the revenues by classes with explanations and a final total. He tabulates the proposed expenditures, classified as exhibited below. He first deducts from the total estimated revenue, the "fixed charges" which must be met without question—such as interest on public debt, definite debt redemptions, revenues required for trust fund liabilities, or other special funds, pension requirements, recurrent allowances for upkeep and maintenance of public buildings, grounds, parks, and the public domain generally. Having totalled these and deducted the total from the expected revenue, he next exhibits the necessary, perhaps unavoidable, expenditures for military and naval purposes, for continuation of engineering projects of great importance, and for similar requirements. The total of these is again subtracted from the remaining revenue and an amount of revenue is left which is available for less mandatory purposes. Concerning the expenditure of this portion of the revenue there may be considerable question and discussion.

Whether, for instance, more shall be spent for stimulation of agriculture, with less for promotion of commerce; whether less should be provided for the function of education and more for public health, or vice versa; whether or not labor and the laboring classes need additional promotion, or whether defect-

ives and dependents should be more liberally provided for. The wards of the nation, Indians and others, would be discussed and their necessities considered; our foreign relations, embassies and commercial attaches would have due attention; all the various functions and activities would have each its needful consideration from the general standpoint of its relative importance to all other expenditure and to the available revenue.

Such an analysis of the finances of the government, of the purposes and character of expenditure, and of the relations of the latter to the expected revenue would present a picture of supreme interest to every intelligent citizen in the country and one of the greatest importance in the efficient handling of financial problems by Congress.

It goes without saying that such an exhibit by the President at the opening of Congress would be intensely stimulating to the public, would awaken nation-wide interest, would provoke discussion and criticism, would flood the mail boxes of Congressmen with urgent appeals to increase here and to cut down there, and would open the eyes of the members themselves as to what could be done and what could not be done in the way of modification and change without upsetting the balanced relations of revenue and expenditure *in toto*.

### Recomendations by Former President Taft.

President Taft sent a budget message to Congress in February, 1913. In this message he said: "Under the Constitution, the power to control the purse is given to Congress. But the same paragraph also requires of the administration the submission of a regular statement and account of the receipts and expenditures." "The President shall, from time to time, give to the Congress information of the state of the Union and recommend to its consideration such measures as he shall judge necessary and expedient. Pursuant to these constitutional requirements, I am submitting estimates of revenues and expenditures in the form of a budget."

President Taft recommended in this message that appropriations should be enacted hereafter under four general classifications and that accounting for "expenditure" by the

departments and establishments should follow the same classifications, namely:

1. Appropriations for "operation," including administration.

2. Appropriations for "upkeep of property" (repairs, maintenance, and depreciation).

3. Appropriations for "fixed charges," including interest and redemption of the public debt.

4. Appropriations for "permanent improvements" (land, buildings, equipment, new construction, etc.).

In relation to these he advised that the first class should be provided by annual appropriations, ordinarily, though in many cases by biennial, triennial, or other less frequent appropriations; the second should be provided by "replacement funds," through permanent appropriations; the third by permanent appropriations, "recurrent," without further legislation; the fourth by permanent appropriations from which allotments may be made annually. Such allotments should be definitely provided from revenue or from bond issues, as may be specified. If the latter, the bonds should be retired on short terms by effective sinking-fund provisions, or by serial redemptions.

### The New and Improved Tables.

The primary distinctions exhibited in Table I are five: (1) War purposes, (2) Civil purposes (other than postal), (3) Postal purposes, (4) General administrative purposes, (5) Local government purposes. The secondary distinction in each of these primary divisions is the separation into "operation and maintenance expenses," contrasted with "construction and improvement outlays." These are the titles of the first two columns in the following detailed exhibit, while the third column represents the totals of the first two columns. These columns set forth important information which has not been available heretofore in government estimates or publications. This separation is fundamentally necessary if comparisons with previous or subsequent years are to be made, or correct ideas obtained concerning extravagance or economy in the expenditure of public money.

TABLE I.

EXPENDITURES FOR THE FISCAL YEAR 1914-15—"ESTIMATES" OF APPROPRIATIONS, CLASSIFIED BY PURPOSES OR FUNCTIONS.

| | Operation and Maintenance Expenses. | Construction and Improvement Outlays. | Total Estimated Expenditures. |
|---|---|---|---|
| FOR WAR PURPOSES—Army, Navy, War Pensions, War Debts. | | | |
| *Current Charges. Annual Appropriations.*[1] | | | |
| Defense by land (Military) | $100,249,712 | $14,379,198 | $114,628,910 |
| Defense by sea (Naval) | 98,311,306 | 42,490,734 | 140,802,040 |
| Administration: Secretary of War | 148,040 | ..... | 148,040 |
| Adjutant-General's Office | 730,570 | ..... | 730,570 |
| Quartermaster Corps | 378,570 | ..... | 378,670 |
| Engineers and Insular affairs | 208,581 | ..... | 208,581 |
| Other offices, War Department | 456,598 | ..... | 456,598 |
| Administration: Secretary of the Navy | 76,460 | ..... | 76,460 |
| Bureaus: Navigation, Intelligence, Records | 108,790 | ..... | 108,790 |
| Bureaus: Engineering, Repairs, Yards and Docks | 106,430 | ..... | 106,430 |
| Bureaus: Supplies, Accounts and other offices | 304,660 | ..... | 304,660 |
| Operation and maintenance (½) of the State, War and Navy Building[1] | 188,013 | 2,000 | 190,013 |
| War pensions, retirements, veterans' homes, etc. | 186,674,527 | 23,424 | 186,697,951 |
| | $387,942,357 | $56,895,356 | $444,837,713 |
| *Fixed Charges. Permanent Appropriations.*[1] | | | |
| Interest on war debts | 13,000,000 | ..... | 13,000,000 |
| Sinking-fund provisions for war debts[4] | 37,000,000 | ..... | 37,000,000 |
| Trust funds, established by war requirem'ts | 2,770,000 | ..... | 2,770,000 |
| Special funds and accts. for war purposes | 5,574,477 | ..... | 5,574,477 |
| Total for War Purposes | $446,286,834 | $56,895,356 | $503,182,190 |
| FOR CIVIL PURPOSES—State, Interior, Agriculture, Commerce, Labor, Etc. | | | |
| *Current Charges. Annual Appropriations.*[1] | | | |
| Commerce, Banking, Etc. | | | |
| Promotion and regulation of commerce | $3,578,305 | ..... | $3,578,305 |
| Promotion of transportation:[5] | | | |
| Improvements of rivers and harbors | 3,197,815 | $38,286,080 | 41,483,895 |
| Lighthouses, life saving, roads, surveys, engineering, etc. | 12,484,004 | 2,679,700 | 15,163,704 |
| Panama Canal | 1,546,395 | 22,228,760 | 23,775,155 |
| Regulation of currency, coinage, etc. | 5,862,452 | ..... | 5,862,452 |
| Regulation of banking | 194,240 | ..... | 194,240 |
| Natural Resources, Agriculture, Etc. | | | |
| Promotion of agriculture[5] | 8,951,617 | 47,500 | 8,999,117 |
| Promotion of forestry | 5,390,741 | 477,590 | 5,868,331 |
| Care and utilization of public lands | 3,184,920 | 10,000 | 3,194,920 |
| Promotion and regulation of mining, water power, etc. | 2,284,520 | ..... | 2,284,520 |
| Meteorological research, weather bureau, etc. | 1,667,270 | 3,000 | 1,670,270 |
| Promotion of fisheries | 1,155,730 | 255,900 | 1,411,630 |
| Welfare, Labor, Etc. | | | |
| Promotion of the welfare of the laboring classes and regulation of labor[6] | 4,068,250 | 812,200 | 4,880,250 |
| Promotion of public health[5] | 4,087,062 | 104,700 | 4,191,762 |
| Promotion of education and recreation[5] | 1,349,376 | 1,271,014 | 2,620,390 |
| Provision for Indians and wards of the nation[5] | 9,295,715 | 1,635,400 | 10,931,115 |
| Provision for defectives, dependents, etc. | 1,565,349 | 455,000 | 2,020,349 |
| Patents, Standards, Statistics, Etc. | | | |
| Patents and copyrights | 1,626,300 | ..... | 1,626,300 |
| Statistical research, census, etc. | 1,709,720 | ..... | 1,709,720 |
| Standards of measurements, etc. | 837,175 | 395,000 | 1,232,175 |
| Foreign Affairs and Dep't. Administration: | | | |
| Foreign affairs and relations[5] | 3,920,970 | 477,000 | 4,397,970 |

TABLE I—(*Continued*).

| | Operation and Maintenance Expenses. | Construction and Improvement Outlays. | Estimated Expenditures. |
|---|---|---|---|
| Administration; Dep't of State | 354,060 | | 354,060 |
| " " " Interior | 634,040 | | 634,040 |
| " " " Agriculture | 765,988 | | 765,988 |
| " " " Commerce | 252,160 | | 252,160 |
| " " " Labor | 183,040 | | 183,040 |
| Operation and maintenance, (½) State, War and Navy Building [1] | 94,007 | 1,000 | 95,007 |
| | $80,241,221 | $69,139,844 | $149,381,065 |
| *Fixed Charges. Permanent Appropriations.*[2] | | | |
| Interest on bonds other than for war purposes | $9,900,000 | | $9,900,000 |
| Sinking-fund provisions for other than war purposes [4] | 23,717,000 | | 23,717 000 |
| Trust funds provisions for other than war purposes | 7,772,730 | | 7,772,730 |
| Special funds and accounts for other than war purposes:—Viz.: | | | |
| Promotion of transportation facilities: | | | |
| Operating canals | $2,000,000 | | $2,000,000 |
| Protection of navigable streams | 2,000,000 | | 2,000,000 |
| River and harbor improvements | | $679,600 | 679,600 |
| Roads and trails | | 420,000 | 420,000 |
| Promotion of Agriculture: | | | |
| Reclamation fund | | 9,000,000 | 9,000,000 |
| Colleges of agriculture and mechanic arts | 2,500,000 | | 2,500,000 |
| Experiment stations, etc | 48,200 | | 48,200 |
| Promotion of public health: | | | |
| Meat inspection, Bureau of Animal Industry | 3,000,000 | | 3,000,000 |
| Promotion of education, recreation, etc.: | | | |
| National forest fund | 600,000 | | 600,000 |
| 2, 3, and 5 per cent. funds to States | 225,000 | | 225,000 |
| Maintenance national parks, etc. | 125,000 | | 125,000 |
| Public schools, territories | 100,000 | | 100,000 |
| Education of blind, etc | 11,000 | | 11,000 |
| Care of Indians: | | | |
| Civilization of the Sioux | 800,000 | | 800,000 |
| Medium of exchange: | | | |
| National currency, contingent expenses, etc | 280,000 | | 280,000 |
| Foreign affairs: | | | |
| Pay of consular officers in transit | 65,000 | | 65,000 |
| Care of defectives: | | | |
| Indigent. Alaska | 25,000 | | 25,000 |
| Totals of special funds and accounts | $11,779,200 | $10,099,600 | $21,878,800 |
| Other permanent appropriations for other than war purposes | $381,500 | | $381,500 |
| Totals for Civil Purposes (except Postal) | $133,791,651 | $79,239,444 | $213,031,095 |
| For Postal Service. | | | |
| Postal service, payable from postal revenues | $306,953,117 | | $306,953,117 |
| Administration of Postmaster-General's Dep't | 1,850,000 | | 1,850,000 |
| Operation and maintenance of post offices, etc.[1] | | | |
| Totals for Postal Service [1] | $308,803,117 | | $308,803,117 |

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TABLE I—(*Concluded*).

| | Operation and Maintenance Expenses. | Construction and Improvement Outlays. | Estimated Expenditures. |
|---|---|---|---|
| FOR GENERAL ADMINISTRATIVE PURPOSES—Legislative, Executive, Judicial, Etc. Covering requirements both for war and for civil purposes. | | | |
| *Current Charges. Annual Appropriations.*[7] | | | |
| Legislative: | | | |
| The United States Senate | $1,849,287 | $8,500 | $1,857,787 |
| The House of Representatives | 4,956,985 | ..... | 4,956,985 |
| Judicial: | | | |
| The Supreme Court and other courts | 6,299,110 | ..... | 6,299,110 |
| Executive: | | | |
| The President, Vice President and the executive offices | 210,440 | ..... | 210,440 |
| Civil Service Commission | 450,165 | 5,000 | 455,165 |
| Collection of the revenues, etc.—Treasury | 17,247,650 | 125,000 | 17,372,650 |
| General accounting and auditing—Treasury | 1,752,080 | ..... | 1,752,080 |
| Operation and maintenance of public buildings and grounds[1] | 8,098,412 | ..... | 8,098,412 |
| Construction and improvement of buildings and grounds | ..... | 6,302,584 | 6,302,584 |
| Public printing, all departments | 5,892,408 | 130,000 | 6,022,408 |
| Genreal Supply Committee[2] | 65,640 | ..... | 65,640 |
| Reference and library purposes | 465,585 | 127,000 | 592,585 |
| Distribution of documents | 318,275 | ..... | 318,275 |
| Administration of Treasury Dep't | 1,890,770 | ..... | 1,890,770 |
| Administration of Dep't of Justice | 777,711 | ..... | 777,711 |
| Detection of crimes, legal advice, etc. (Justice) | 2,694,620 | ..... | 2,694,620 |
| Total | $52,969,138 | $6,698,084 | $59,667,222 |
| *Fixed Charges. Permanent Appropriations.*[7] | | | |
| Revenue refunds, drawbacks, etc. | $8,470,000 | ..... | $8,470,000 |
| Retired judges, Hawaiian judges, etc. | 175,500 | ..... | 175,500 |
| Revenue Collection, night services | 225,000 | ..... | 225,000 |
| Totals for General Administration Purposes | $61,839,638 | $6,698,084 | $68,537,722 |
| FOR LOCAL GOVERNMENT PURPOSES. | | | |
| Territorial Governments | $304,638 | ..... | $304,638 |
| Philippine customs and internal revenue | 321,000 | ..... | 321,000 |
| District of Columbia | 10,911,094 | $3,580,521 | [3] 14,491,615 |
| Militia, industrial schools, etc. | 10,400 | ..... | 10,400 |
| Totals for Local Government Purposes | $11,547,132 | $3,580,521 | $15,127,653 |
| Grand Totals, All Purposes | $962,268,372 | $146,413,405 | $1,108,681,777 |

[1] Operation and maintenance expenses of office building, rents, etc., are mainly included in item [1] in "General Administrative Purposes," because these expenses can not be separated, under present methods of bookkeeping.

[2] This amount should be distributed in detail to the various departments and divisions.

[3] Approximately one-half of this is offset by District of Columbia revenues.

[4] Sinking-fund provisions are negligible; merely bookkeeping items having no actual existence. There are no securities and no cash in the, socalled, "sinking fund."

[5] See also additional estimates under "permanent appropriations."

[6] Including Bureau of Naturalization, $250,000.

[7] These terms "annual" and "permanent" might be better stated "current" and "recurrent," as all appropriations are enacted annually by Congress, even though the amount is not fixed, (indefinite) or the time is not fixed (indeterminate).

TABLE II.

CLASSIFICATIONS BY (a) APPROPRIATION ACTS AND BY (b) UNITS OF ORGANIZATION.

| Units of Organization, Departments, divisions, etc. | Permanent Annual Acts. | Legislative, Executive, and Judicial Act. | Sundry Civil Act. | Diplomatic and Consular Act. | Army Act. | Fortifications Act. | Military Academy Act. | Naval Act. | Rivers and Harbors Act. | Pension Act. | Indian Act. | Agricultural Act. | Postal Act. | District of Columbia Act. | Public Bills. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Legislative:* | | | | | | | | | | | | | | | | |
| U. S. Senate | | $1,857,788 | | | | | | | | | | | | | | $1,857,788 |
| House of Representatives | | 4,956,985 | | | | | | | | | | | | | | 4,956,985 |
| Library of Congress | $800.00 | 695,165 | | | | | | | | | | | | | | 695,965 |
| Botanic Gardens | | 23,394 | $7,000 | | | | | | | | | | | | | 30,394 |
| *Executive:* | | | | | | | | | | | | | | | | |
| President and Vice-President | | 185,440 | 25,000 | | | | | | | | | | | | | 210,440 |
| Civil Service Commission | | 414,540 | | | | | | | | | | | | | | 414,540 |
| Department of State | 171,000 | 354,060 | | $4,447,043 | | | | | | | | | | | | 4,972,103 |
| Treasury Department | 92,943,000 | 12,597,497 | 36,903,550 | | | | | | | | | | | | | 142,444,047 |
| Government in Territories | 53,000 | 207,138 | | | | | | | | | | | | | | 260,138 |
| State, War and Navy Building | | 285,020 | | | | | | | | | | | | | | 285,020 |
| War Department | 9,317,600 | 1,944,718 | 43,561,888 | | $104,947,759 | $9,124,399 | $1,052,876 | | $34,266,395 | | | | | | | 204,215,635 |
| Navy Department | 1,881,477 | 862,390 | | | | | | $144,417,453 | | | | | | | | 147,161,320 |
| Department of the Interior | 19,767,500 | 5,761,765 | 6,285,208 | | | | | | | $169,150,000 | $10,208,865 | | | | | 211,173,338 |
| Post Office Department | | 1,850,000 | | | | | | | | | | | $306,953,117 | | | 308,803,117 |
| Department of Agriculture | 5,999,200 | | | | | | | | | | | $19,061,332 | | | | 25,060,532 |
| Department of Commerce | 3,000 | 5,043,810 | 8,636,960 | | | | | | | | | | | | $1,635,500 | 15,319,270 |
| Department of Labor | | 790,010 | 3,973,480 | | | | | | | | | | | | | 4,763,490 |
| Department of Justice | | 612,880 | 1,483,332 | | | | | | | | | | | | | 2,096,212 |
| Lincoln Memorial Commission | | | 600,000 | | | | | | | | | | | | | 600,000 |
| Public Printer | | | 6,340,683 | | | | | | | | | | | | | 6,340,683 |
| Commission of Fine Arts | | | 7,500 | | | | | | | | | | | | | 7,500 |
| *Judicial* | 147,500 | 1,242,110 | 7,402,856 | | | | | | | | | | | | | 8,792,466 |
| *Independent Offices:* | | | | | | | | | | | | | | | | |
| Smithsonian Institution | 57,630 | | 821,850 | | | | | | | | | | | | | 879,480 |
| Interstate Commerce Commission | | | 1,695,000 | | | | | | | | | | | | | 1,695,000 |
| Board of Mediation and Conciliation | | | | | | | | | | | | | | | 50,000 | 50,000 |
| Commission on Industrial Relations | | | | | | | | | | | | | | | 250,000 | 250,000 |
| District of Columbia | 854,700 | | | | | | | | | | | | | $14,491,614 | | 15,346,314 |
| | $131,196,407 | $39,684,710 | $117,744,307 | $4,447,043 | $104,947,759 | $9,124,399 | $1,052,876 | $144,417,453 | $34,266,395 | $169,150,000 | $10,208,865 | $19,061,332 | $306,953,117 | $14,491,614 | $1,935,500 | $1,108,681,777 |

Table II exhibits a summary from the insider's viewpoint. The details of this viewpoint fill eight hundred and seventy quarto pages in the "Book of Estimates, 1915," and will fill nearly as many more in the "Digest of Appropriations, 1915." This summary has been arranged in columnar form, each column exhibiting the title of an Appropriation Act by Congress. (It should be remembered that all of these figures are "estimates," not final appropriations.) The primary divisions of the government, "legislative," "executive," and "judicial," as well as the subdivisions—departments, establishments, etc.—are set forth in the title column at the left. Our analysis consists in the distribution of items pertaining to each unit of organization to the proper column representing an appropriation act. By this classification, the wide distribution of such items is clearly exhibited and the advantage of some better method of grouping appropriations becomes evident.

## TABLE III.

For comparison with the two methods exhibited of expenditure estimates, we provide a classification for revenues, which is self-explanatory in the main. The primary division is into *Special* revenues and *General* revenues. The first is applicable only to special purposes under requirements of law, or to revenues which arise on account of various classes of expenditure. The second consists of revenues which are unrestricted either by requirements of law or of accounting and which are available for the general expenditures of the government under current appropriation acts. The following table sets forth the actual revenues for the last fiscal year (1913) as an illustration of a proper classification of the revenues, by estimates, for the new fiscal year (1915), or for some subsequent year:

TABLE III.

REVENUES (ACTUAL) FOR THE FISCAL YEAR, 1912–13 (AS A BASIS FOR ESTIMATES OF REVENUE FOR 1914–15).

I. SPECIAL REVENUES:

Viz: (a) Revenue reserved by law for special purposes, and also (b) revenues arising on account of special classes of expenditure although not specifically reserved for such purposes by law.

| | | | |
|---|---|---|---|
| (a) | | | |
| Revenue of trust funds | | $12,085,561 | |
| District of Columbia revenues | | 8,070,369 | |
| Reclamation fund (sales, fees, etc.) | | 3,585,271 | (1) |
| Contributed moneys (rivers, harbors, etc.) | | 1,039,308 | |
| Navy fines, forfeitures, small stores, etc. | | 985,824 | |
| National forests fund | | 749,996 | |
| Philippine fund | | 308,986 | |
| Sales public lands, 2, 3, and 5% funds (States) | | 238,890 | |
| Night service—customs | | 229,971 | |
| Alaska fund | | 205,097 | |
| Sales of ordnance material | | 202,432 | |
| National forests and Hot Springs Reservation | | 95,250 | |
| Sales of timber, sites, products, etc. | | 16,788 | |
| Forest service co-operative fund | | 6,748 | |
| | | $27,821,301 | |
| Increments to appropriations: | | | |
| Panama Canal | $2,377,029 | | |
| " | 1,693,148 | | |
| | | 4,070,177 | |
| Gain on exchange (Navy) | | 18,766 | |
| Interest on daily balances (Navy) | | 6,290 | |
| Total "a" | | | $31,916,534 |
| (b) | | | |
| Immigration fund (head tax) | | $4,735,062 | |
| Patent fees | | 2,077,102 | |
| Counsular and consular court fees | | 1,798,408 | |
| Forest service | | 1,716,931 | |
| Customs fees, fines, penalties, etc. | | 1,590,355 | |
| Judicial fees, fines, penalties, etc. | | 1,123,950 | |
| Fees, etc., Land offices | | 547,000 | |
| Reimbursement for advances to Indian funds | | 531,916 | |
| Reimbursement for expenses Nat'l Bank Redemption Agency | | 505,735 | |
| Recoveries of bullion and expenses on coinage | | 440,810 | |
| Naturalization fees | | 390,425 | |
| District of Columbia, fees, rents, etc. | | 290,031 | |
| Navigation fees, fines, penalties, etc. | | 191,695 | |
| Earnings on telegraph and telephone lines | | 186,749 | |
| Sale of seal and fox skins, Pribilof Islands | | 151,146 | |
| Recoveries, river and harbor frauds | | 127,973 | |
| Copyright fees | | 117,100 | |
| Depredations on the public lands | | 103,600 | |
| Reimbursements for work and costs, various departments | | 84,968 | |
| Immigration fines, fees, and penalties | | 72,905 | |
| Purchase of discharges, Navy and Marine Corps | | 66,304 | |
| Net profits on ships' stores | | 40,294 | |
| Passport fees | | 28,384 | |
| Copying fees—General Land Office | | 21,162 | |
| Maintenance charges, etc., Irrigation systems | | 14,394 | |
| Testing fees, Bureau of Standards | | 14,251 | |
| Earnings on transports | | 9,755 | |
| Forfeitures by contracts | | 8,050 | |
| Miscellaneous fees | | 6,368 | |
| Miscellaneous refunds and rebates | | 6,254 | |
| Game licenses—Alaska | | 4,845 | |
| Chinese exclusion, fines, fees, etc. | | 2,654 | |
| Testing fees—Bureau of Mines | | 2,005 | |
| Revenue Crater Lake and Mesa Verde Parks | | 1,399 | |
| Revenue Nat'l Training School for Boys | | 813 | |
| Internal revenue, fines, fees, etc. | | 200 | |
| Total "b" | | | $17,010,993 |
| Total Special Revenues "a" and "b" | | | $48,927,527 |

II. General Revenues:

Viz.: Revenues available for any purposes of the Government which arise from sources not specialized either by law or by corresponding expenditure.

| | | | |
|---|---|---|---|
| Customs | | $318,891,396 | |
| Less, duties on imports from Philippines (Special) | | 1,184 | |
| | | | $318,890,212 |
| Internal revenue: | | | |
| Ordinary | | 309,410,666 | |
| Less, Philippine revenue (Special) | | 307,802 | |
| | | | 309,102,864 |
| Corporation tax | | | 35,006,300 |
| Public lands receipts | | $2,910,205 | |
| Less, pledged to special purposes, viz.: Reclamation fund | $2,492,607 | 2,731,497 | |
| 2, 3, and 5% funds | 238,890 | | |
| | | | 178,708 |
| Seigniorage, silver and minor coinage | | | 5,104,338 |
| Tax on circulation of National Banks | | | 3,730,059 |
| Sales of Government property | | | 1,325,167 |
| Compromise and repurchase of forfeited lands | | | 648,583 |
| Chinese indemnity | | | 644,500 |
| Rental of public property | | | 268,301 |
| Unclaimed moneys (Treasury) | | | 47,490 |
| Interest on public deposits | | | 34,610 |
| Recoveries of damaged and lost property | | | 16,987 |
| Interest from Pacific railways | | | 9,493 |
| Conscience fund, etc | | | 3,136 |
| Gain on exchange (State Dept. and Treasury) | | | 1,206 |
| Assessments on owners for deaths on shipboard | | | 1,040 |
| Interest on debts due U. S. (various debts) | | | 946 |
| Recovery, principal and interest Louisiana bonds | | | 326 |
| Miscellaneous | | | 1,056 |
| | | | $675,015,322 |

Summary.

| | | |
|---|---|---|
| Special Revenues "a" (By law) | $31,916,534 | |
| Special Revenues "b" (By expenditure) | 17,010,993 | |
| Total | | $48,927,527 |
| General Revenues | | 675,015,322 |
| Grand Total | | $723,942,849 |

Reconciliation.

| | | | |
|---|---|---|---|
| Grand total as above | | $723,942,849 | |
| Add: receipts of 1913 not covered into Treasury by warrants in 1912–13 | | 505,971 | |
| | | $724,448,820 | |
| Deduct: receipts of previous years covered into Treasury by warrants in 1912–13 | | 337,590 | |
| Net grand total revenues (excluding postal revenues, which were $266,619,526) | | $724,111,230 | per Secretary of the Treasury's Annual Report. |

[1] In addition to this sum there are other receipts into the Reclamation Fund for repayments of water-rights charges, and other sources, amounting to $2,383,126.

Table IV exhibits the form in which the President of the United States might present to the Congress, at the opening of a session in December, a financial plan for the ensuing fiscal year. Each item would be supported by a detailed schedule:—

TABLE IV.

SUMMARY OF THE NATIONAL BUDGET.

| | Estimates for the Fiscal Year, 1915. |
|---|---|
| SOURCES OF REVENUES. | |
| Total estimated Revenues, (other than postal revenues) | $728,000,000 |
| Deduct revenues for special purposes, (Schedule I) | 50,000,000 |
| Remainder, Revenues available for general purposes, (Schedule II) | $678,000,000 |
| PURPOSES OF EXPENDITURE. | |
| *Fixed Charges.* (Schedule III.) | |
| Viz.: For interest on public debts[1] | $22,900,000 |
| For sinking-fund[2] | 60,717,000 |
| For trust funds[3] | 10,542,730 |
| For special funds[4] | 27,453,277 |
| For refunds, retirements, etc.[5] | 9,252,000 |
| Totals | $130,865,007 |
| Eliminate sinking-funds[2] | 60,717,000 |
| Remainder of fixed charges | $70,148,007 |
| Deduct, portion to be provided from special revenues | 50,000,000 |
| Remainder, required from general revenues | $20,148,007 |
| *Summaries.* | |
| General revenues, as above | $678,000,000 |
| Remainder of fixed charges, as above | 20,148,007 |
| Revenue available for current appropriations | $657,851,993 |
| ESTIMATES OF CURRENT APPROPRIATIONS. | |
| WAR PURPOSES. (Schedule IV.) | |
| (a) *Operation and Maintenance*: | |
| Viz.: Defense by land, (Military) | $100,249,712 |
| Defense by sea, (Naval) | 98,311,306 |
| Administration: Secretary of War | 148,040 |
| Other offices, War Department | 1,774,419 |
| Administration: Secretary of the Navy | 76,460 |
| Bureaus and other offices, Navy Department | 519,880 |
| Operation and maintenance (⅓) State, War and Navy Building | 188,013 |
| | $201,267,830 |
| War pensions, retirements, veterans' homes, etc, | 186,674,527 |
| Total | $387,942,357 |
| (b) *Construction and Improvement*: | |
| Viz.: Fortifications, etc. (Military) | 14,379,198 |
| Battleships, etc. (Naval) | 42,490,734 |
| Veterans' homes, etc. | 25,424 |
| Total War, except "fixed charges" | $444,837,713 |

| | |
|---|---|
| **Civil Purposes.** (Schedule V.) | |
| (a) *Operation and Maintenance*: | |
| Viz.: Commerce, Banking, etc. | $26,883,211 |
| National Resources, Agriculture, etc. | 22,634,798 |
| Welfare, Labor, etc. | 20,365,752 |
| Standards, Statistics, etc. | 2,546,895 |
| Patents and copyrights | 1,626,300 |
| Foreign Affairs | 3,920,970 |
| General Administration: | |
| Department of State | 354,060 |
| " " Interior | 634,040 |
| " " Agriculture | 765,988 |
| " " Commerce | 252,160 |
| " " Labor | 183,040 |
| Operation and maintenance of public buildings and offices[6] | 94,007 |
| Total | $80,241,221 |
| (b) *Construction and Improvement*: | |
| Improvement of rivers and harbors | 38,286,080 |
| Panama Canal | 22,228,760 |
| Lighthouses, etc. | 2,679,700 |
| Other (see detailed schedules) | 5,945,304 |
| Total Civil, except fixed charges | $149,381,065 |
| **Postal Purposes.**[7] | |
| Postmaster-General's department | $1,850,000 |
| **General Administrative Purposes.** (Schedule VI.) | |
| (a) *Operation and Maintenance*: | |
| Viz.: Legislative | $6,806,272 |
| Executive, (except above in Civil) | 39,863,756 |
| Judicial | 6,299,110 |
| Total | $52,969,138 |
| (b) *Construction and Improvement*: | |
| Public buildings and grounds | 6,302,584 |
| Other | 395,500 |
| Total general administrative except fixed charges | $59,667,222 |
| **Local Government Purposes.** (Schedule VII.) | |
| (a) *Operation and Maintenance*: | |
| District of Columbia | $10,921,494 |
| Territorial governments, customs, etc. | 625,638 |
| Total | $11,547,132 |
| (b) *Construction and Improvement:* | |
| District of Columbia | 3,580,521 |
| Total local government purposes | $15,127,653 |
| **Grand Total All Purposes.** | |
| (Excluding fixed charges, postal service, and sinking fund) | $670,863,653 |

**Recapitulation, 1915.**

| | |
|---|---|
| Revenue available for current appropriations | $657,851,993 |
| Estimates of current appropriations | 670,863,653 |
| Deficit of estimated revenue (1915) | 13,011,666 |
| Panama Canal estimates, if bonds are issued, may be deducted from total current appropriations | 23,775,155 |
| Surplus of estimated revenue (1915), if bonds are issued to provide for Panama Canal | $10,763,489 |

# METHODS OF DIRECT LEGISLATION IN OREGON.

By William F. Ogburn, *Reed College, Portland, Ore.*

The success or failure of direct legislation is usually judged either by the kind of laws passed or by the effect of the law-making process on the citizens. It is usually admitted that in Oregon a large number of laws fulfilling valuable social ends have been passed through the medium of the initiative and the referendum. Indeed, the body of laws, known as the "Oregon System" is the direct result of the initiative and the referendum. It is also admitted that the people of Oregon have become comparatively well educated in governmental and legislative matters as a result of their experience in popular law-making during the past decade.

These two somewhat broad and simple criteria are concerned with the result, whereas the student is also interested in the methods of obtaining these results. A study of the methods furnishes one a somewhat more intimate knowledge than a study of results alone. The manner in which voters use these popular law-making instruments is still a matter of controversy, however. For instance, some observers state that voters of Oregon object to lengthy measures appearing on the ballot and vote them down; while others maintain that voters exercise their capabilities as well in voting on long measures as on short ones. Some other observations concerning which there is speculation are these: that bills calling for the expenditure of money are not passed; that the people will amend their constitution as readily as they will pass bills; that the people do not pass bills of only local interest; that the initiative is more successful at the polls than the referendum; that the publication and distribution of arguments with the measures, voted on previous to the election, increases the vote.

The settlement of questions such as the foregoing will throw considerable light on the capacity of the voters as law-makers. For instance, if it be established that long measures do not receive as large a vote as short ones and that short ones are

more readily adopted at the polls, the ability of the people as law-makers would thus seem to be limited.

The method of treating these questions, heretofore, has been personal impressions of observers. Such impressions are, in a large measure, subject to the personal traits of the observer, as, for instance, his capacity for seeing a thing and his personal opinions. This method yields little proof of accuracy for generalizations, but has furnished some interesting results in the nature of analyses of the measures voted on. This has been almost the only possible means of treatment, because the number of measures submitted to the voters has been too small to treat quantitatively. Now, however, Oregon citizens have been making laws for a decade and during that time have voted on 101 measures, a number large enough to yield some statistical results.

It is the purpose of this paper to endeavor to establish as facts, by quantitative measurements, matters now debatable. In doing this, it is also desired, as of equal importance, to describe more adequately the process of law-making in Oregon.

It is observed that most of the questions referred to above are questions of association. For instance, the question, whether short measures poll a larger vote than long ones, is really a question of association, the association of the length of the measure with the size of the vote polled. Are long measures associated with large votes? If this is true, then the question is answered. To arrive at a solution, then, the problem is to measure the degree of association. Such a measure of association can be found; this is called the coefficient of association;* and its nature is such that when there is complete association the coefficient becomes $+1$ and if there is no association the coefficient becomes 0. For instance, if long measures almost invariably poll large votes, the coefficient of association would be a fraction in the direction of $+1$. On the other hand, if there is disassociation, the coefficient varies con-

* This coefficient was formulated by Mr. G. Udny Yule. His treatment of it is found in the Journal of the Royal Statistical Society, Volume LXXV, Part VI, pp. 579–642. The coefficient here used is called $\omega$, and in the terminology of the four-fold table, $\frac{a \mid b}{c \mid d}$ is equal to $\frac{1-\sqrt{k}}{1+\sqrt{k}}$, where $k=\frac{cb}{ad}$. The error of this coefficient, $\epsilon_\omega$, is equal to $\frac{1-\omega^2}{4}\sqrt{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}+\frac{1}{d}}$.

tinously between 0 and −1. For instance, if long measures almost invariably poll small votes, the coefficient of association would be a fraction in the direction of −1. A further description and illustration of this method of measurement will be made in the treatment of the first question, which asks whether there is any association between the institutional nature of measures (bills and constitutional amendments), and decisions at the polls (adoptions and rejections).

*Institutional Nature of Measures and Decisions at the Polls.* Are bills adopted more readily than constitutional amendments? There have been 61 bills before the voters and 40 constitutional amendments. Of the bills, 24 were adopted and 37 were rejected. Of the constitutional amendments, 18 were adopted and 22 were rejected. The data may be arranged in tabular form as follows:

| Institutional Nature of the Measures. | Decisions at Polls. | | |
|---|---|---|---|
| | Adopted. | Rejected. | Total. |
| Bills | 24 | 37 | 61 |
| Constitutional Amendments | 18 | 22 | 40 |
| Total | 42 | 59 | 101 |

The coefficient of association is found to be −0.06. This is so small,* however, that it does not show any association.

This conception of apparent indifference of voters to whether the measure is a constitutional amendment or a bill is further strengthened by the coefficient of association between the institutional nature of the measures (constitutional amend-

* The fact that the number of cases dealt with (101) is so small makes very great care in interpreting results necessary. Mr. Yule, in his Introduction to the Theory of Statistics, notes an illustration of the effect of small numbers on the result, seen from the tossing of coins in pairs, where 100 pairs gave the following results.

| | |
|---|---|
| First toss heads and second heads | 26 |
| First toss heads and second tails | 18 |
| First toss tails and second heads | 27 |
| First toss tails and second tails | 29 |

These data yield a coefficient of association, $\omega$, equal to +0.11. Yet it is fairly certain that there is no such positive association, the result being due to chance.

The coefficient of association (−0.06), found from the data on the institutional nature of measures and decisions at the polls, has an error equal to 0.10. On the assumption of normal distribution the chances are even that the true $\omega$ in this case will be between 0 and −0.12, whereas the chances are 22 to 1 against the true $\omega$ being outside the limits +0.12 and −0.24. So in no case could the measure of association be very large.

ments and bills) and the sizes of the votes (large and small). In this case, the coefficient* is −0.11. Furthermore, constitutional amendments and bills are equally closely contested at the polls. The coefficient of association† is +0.10 as measured for the association between the institutional nature of the measures (constitutional amendments and bills) and the degree of contest at the polls (closely contested and not closely contested). Mr. Lowell's contention,‡ made seventeen years ago, that the referendum would tend to remove the distinction between constitutional and other laws, is strengthened by the evidence from Oregon.

*The Sizes of the Votes.* The ability of the people to make laws may be tested by the sizes of the votes cast on the measures at the elections. This may be done in two ways. First, the average vote from election to election may be compared; and, second, the nature of the frequency-distribution of the votes may be observed. With regard to the first point, decreasing averages for the five elections since the operation of the initiative and referendum would seem to indicate that the people's interest in law-making was on the wane, while increasing averages would seem to indicate increased interest. The procession of averages might also indicate fluctuations, such as we know people are liable to. To find the average vote at each election, beginning with 1904, would not yield the information desired, because it would not make allowance for the increase in population, which has been very great in Oregon in the past decade. To eliminate this factor of increase of population, a number has been computed for each election, which would have been the average vote on the measure if as many voters had gone to the polls in these election periods as went in 1912. For instance, in November, 1912, there were 144,113

* Any vote above the average vote (150,153), was considered large and below the average was considered small. How this average was determined is presented in the paragraph dealing with sizes of the votes. There have been 17 constitutional amendments and 33 bills receiving a large vote. There have been 23 constitutional amendments and 28 bills receiving a small vote.

† The closeness of contest is discussed under the paragraph dealing with the degree of contest at the polls. The differences between the vote for and the vote against a measure indicates the closeness of the contest. All above this average difference (31,785) were considered not closely contested and all below the average were treated as closely contested.

There were 26 constitutional amendments closely contested and 14 not closely contested. There were 24 bills closely contested and 27 not closely contested.

‡ Lowell, Governments and Political Parties in Continental Europe, Vol. II, p. 297.

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| | |
|---|---|
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‡ Lowell, Governments and Political Parties in Continental Europe, Vol. II, p. 297.

citizens who voted, and the average vote on the measures was 106,818. (Candidates and measures have been voted on at the same elections.) In November, 1910, there were 120,248 citizens who voted and the average vote on the measures was 85,148. Whereas, if there had been 144,113 voters in 1910, the average vote on the measures would have been, on this basis, 102,177. The corrected averages, then, for the election periods in 1904, 1906, 1908, 1910 and 1912 are respectively, 113,205, 108,442, 106,917, 102,177, and 106,818.*

| | 1904. | 1906. | 1908. | 1910. | 1912. |
|---|---|---|---|---|---|
| Average votes on measures ..... | 78,075 | 74,098 | 86,224 | 85,148 | 106,818 |
| Number of citizens voting at polls | 99,315 | 99,445 | 116,614 | 120,248 | 144,113 |
| Percentages; average vote of number voting..... | 0.78 | 0.74 | 0.74 | 0.71 | 0.74 |

In interpreting these averages it should be borne in mind that the number of measures voted on at each of the respective election periods is 2, 11, 19, 32, and 37. Perhaps the most striking observation to be made from these data is the constancy of the average, showing that the interest of the voters in law-making is constant.

The nature of the frequency-distribution of the votes on the measures is shown in Figure 1. It is seen to be a distribution where there are few measures polling large votes, few measures polling small votes and many measures polling votes near the average in number. In fact, for such a small number of cases, the form of the distribution approaches very closely the normal curve. If there had been many measures on which the votes were large, and many measures on which the votes were small, the situation would have been similar to that of votes for party candidates for offices, where there are large parties and small parties. If such a distribution existed for the votes on measures it would indicate some unusual force at work, as for instance, parties, as an explanation of the extreme fluctuation of interest of the voters. However, the frequency distribution seems to be normal. It is interesting that meas-

* Another method of getting at the desired information would be to find what percentage the average vote at each election is of the total number of citizens who voted. This information, disclosed in the following table, leads to the same general result as was found by the corrected averages.

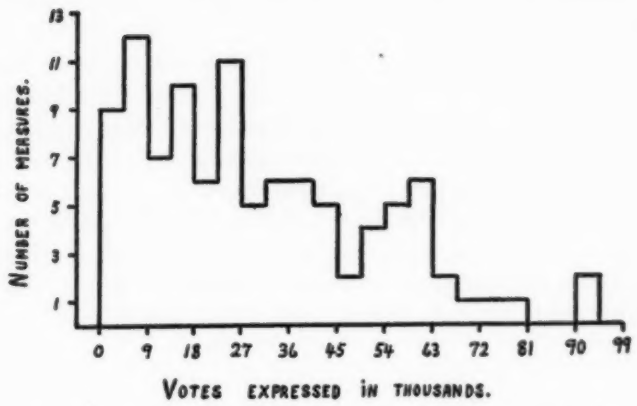


FIG. 1.—Frequency-distribution * of votes on initiative and referendum measures voted on in Oregon during the decade, 1903–1913.

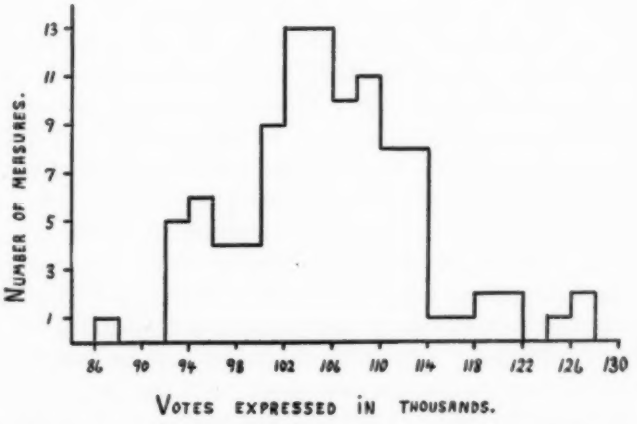


FIG. 2.—Frequency-distribution of the votes by which initiative and referendum measures won and lost in Oregon during the decade, 1903–1913. This indicates the distribution of the measures according to the degree that they are closely contested.†

* It is remembered that the votes cast occur over a series of years. To make a frequency-distribution, then, it becomes necessary to eliminate the factor of increase of population. This was done for each measure as it was done in treating averages, which is shown in the first paragraph dealing with the sizes of the votes.

† In obtaining the figures on which Figure 2 is based, allowance was made for the increase in population, as in the treatment of the average votes.

ures regarding the sale of liquor and woman-suffrage amendments have polled the largest votes. The vote has also been large on some single-tax measures. Bills regarding the creation of new counties have polled the smallest votes.* There have also been some tax measures that have polled small votes.

The variation in the sizes of the votes cast on measures furnishes evidence regarding the capacity of the people to make laws. For instance, if the vote on each measure is very nearly the same, it will indicate a lack of discrimination in interest on the part of the people. For the data serving as the basis of Figure 1, the measure of variability, the standard deviation, is 7,531 and the coefficient of variation $\left(\frac{\delta}{A}\right)$, is 0.07, thus showing that there is discrimination of interest on the part of the people in regard to the measures submitted to them.

*The Degree of Contest at the Polls.* To what extent the measures are closely contested would seem to be related to the intelligence of the voters and to the nature of the laws submitted to the people to be voted on. If all measures were equally closely contested, there would seem to be either an almost unbelievable sameness of laws submitted, or else some extraordinary force in operation, as perhaps parties. If, on the other hand, there is much variation in the degree of contest on the measures, the voters would seem to be using discretion. In speaking of a closely contested measure, there is meant one where the difference between a vote for and a vote against a measure is small; and the difference between a vote for and a vote against a measure is the numerical expression for the degree of contest. Figure 2 shows the frequency-distribution of the votes indicating the degree of contest at the polls. It is to be observed that most of the measures are fairly closely contested; also that the variation in the degree of contest is quite great. The measure of this variation, the standard deviation, is 21,807 and the coefficient of variation, $\left(\frac{\delta}{A}\right)$, is 0.68. This is a very high degree of variation and shows considerable discrimination on the part of the voters. The most closely contested measure was an income tax measure, and the least

closely contested measure was a measure providing for a gross-earnings tax on express, telephone, and telegraph companies.

*Methods of Submitting Measures and Decisions at the Polls.* The question has arisen, Do the citizens, in voting, discriminate between an initiative measure and a referendum measure with regard to willingness to adopt or to reject? If they do, it tends to show a particular care for these methods; if not it would tend to show that attention is focused on the nature of the bill, rather than the nature of its presentation. Of the initiative measures submitted to the voters, 33 have been adopted and 43 have been rejected; 9 referendum measures have been adopted and 16 referendum measures have been rejected. These data show the coefficient of association to be +0.08, the measure of association between the methods of submitting measures (initiative and referendum) and the decisions at the polls (adoption and rejection). There is no indication from this evidence, then, that it makes any difference to the voters whether the measure is submitted by initiative or referendum.

*Money-Bills and Decisions at the Polls.* It has been frequently said that the people in Oregon will not adopt bills providing for the expenditure of money. Are the people conservative in spending money? If they are, then how much so? In collecting data on this question, it was first necessary to determine what bills provided for the expenditure of money. In order to do this there was used the conception that a money-bill is one authorizing the expenditure, or the power to expend, money of the general state more than an insignificant sum in amount; this authorization being fairly easily recognizable from the text or the title of the measure. There is still some difficulty in making this classification certain. In the appendix to this paper will be found a list of the bills declared money bills. In other cases, where the classification was doubtful, the appendix will indicate the choices made. Of the bills not providing for the expenditure of money, 34 were adopted and 39 were rejected. Of the money-bills, 8 were adopted and 20 were rejected. These yield a coefficient of +0.19; the probable-error of this coefficient is 0.08. It is probable then from the Oregon experience that money-bills are more readily re-

jected than adopted, though this tendency is not carried to any great degree. However, money-bills are not associated with any larger vote nor are they more closely contested as the two coefficients* in these two cases are respectively +0.007 and +0.07.

*Sizes of the Votes and Decisions at the Polls.* The measures that are adopted do not draw larger votes nor are they more closely contested than those rejected. The respective coefficients† of association are +0.11 and +0.04. These coefficients seem to indicate that the voters are as interested in rejecting a measure as they are in adopting it; also that they will decide on a measure by a large margin as readily as by a small margin.

*Local or General Nature of Measures and Decisions at the Polls.* Several times there have appeared on the ballot bills which citizens refer to as local in nature. And by "local in nature" is not meant a bill which is voted on only by a single county or locality; but one that is voted on by the whole state, but applying with particular emphasis to some special locality. An illustration is a measure establishing a normal school at a specified place; another, one changing the boundaries of a county. It is, of course, not always easy for the classifier to say when a bill is local in nature or general. For instance, the appropriation for a building at the state university was classified as a bill general in nature. It is argued that the people ought to vote only on measures general in nature, and leave those measures necessarily local in nature to be handled by the state legislature. If the people consider the appearance of measures, local in nature, on the ballot, an abuse of direct legislation and think that such measures ought to be handled by the state legislature, there will be an association between local measures and rejection at the polls. This is probably

* Of the money-bills, 14 received a large vote and 14 received a small vote. Of the non-money-bills, 36 received a large vote and 37 received a small vote.

Of the money-bills, 18 were closely contested and 10 were not closely contested; of the non-money-bills, 24 were closely contested and 31 were not closely contested.

† Of the measures adopted, 24 received large votes and 19 received small votes. Of the measures rejected, 26 received large votes and 32 received small votes.

Of the measures adopted, 26 were closely contested and 16 were not closely contested. Of the measures rejected, 34 were closely contested and 25 were not closely contested.

true, as the coefficient of association* is +0.13. Such association seems to be only very slight, however. If the people objected to the use of the ballot for measures local in nature, these measures would not be closely contested. They are not. For the association of the nature of the measures (general and local) with the degree of contest at the polls (closely contested and not closely contested) the coefficient† is +0.21. Here again, however, the association is not very great. Furthermore, measures, local in nature, draw smaller votes; the coefficient of association‡ is +0.26. (Of the 19 measures classified as local in nature, 10 had to do with either creating new counties or changing county boundaries.) If the interpretation of the meaning of these coefficients is correct, then the people probably feel moderately that the legislature should decide on measures, local in nature.

*Publications of Arguments and Sizes of Votes.* A pamphlet (or book as the case may be), containing a text of the measures to be voted on is mailed to each voter by the secretary of state just prior to the election. Provision has been made for publishing in this pamphlet, after each measure, arguments for or against the particular measure or both, submitted by interested persons or organizations. The use of space in this pamphlet is optional; as a result there are many cases where it is not used. The question arises, Does this publication of arguments stimulate the vote? In endeavoring to answer this question, it is desirable to measure the association between the publications of arguments (arguments for or against, or both, and no arguments), and the sizes of the votes (large and small). This has been done and the coefficient of association § is +0.01, thus indicating that the publication of arguments is not associated with large votes. This may not mean that the publication of arguments has not stimulated votes; as those measures of

* Of the measures, general in nature, 36 were adopted and 46 were rejected. Of the measures, local in nature, 6 were adopted and 13 were rejected.

† Of the measures, general in nature, 52 were closely contested and 30 were not closely contested. Of the measure, local in nature, 8 were closely contested and 11 were not closely contested.

‡ Of the measures, general in nature, 45 polled a large vote and 37 polled a small vote. Of the measures, local in nature, 5 polled a large vote and 14 polled a small vote.

§ Of these measures, published with arguments either for or against a measure, or both, 32 received a large vote and 32 received a small vote. Of these measures published without argument, 18 received a large vote and 19 received a small one.

widest general interest may have been especially selected as not needing the publication of arguments. Familiarity with the pamphlets, however, leads one to think that there is hardly such a selection.

*Publications of Arguments and Decisions at the Polls.* Does the publication of an argument against a measure help its defeat? Does the publication of an affirmative argument materially assist in the passage of the measure? Taking up for consideration the first question, the comparison is only between those measures with a negative argument on the one hand and, on the other hand, those measures without arguments and those with arguments both affirmative and negative. Those measures with an affirmative argument only are not included in the data for this problem. Of the measures with only a negative argument, 11 were rejected at the polls and 1 was adopted. Of those measures with no argument and of those with both negative and affirmative arguments, 32 were rejected and 33 were adopted. These yield a coefficient of association equal to $+0.54$ with a probable-error of 0.12. Thus arguments against measures are associated with their rejection.

The question next to be considered is, Does the publication of an affirmative argument assist in the passage of the bill? The data used in determining the answer to this question consist of those measures published with only an affirmative argument on the one hand, and, on the other hand, those published without any argument and those published with both negative and affirmative arguments. Those measures published with only a negative argument are not included in the data for this problem. Of those measures with only an affirmative argument, 7 were adopted and 15 were rejected. Of those measures with no arguments and those with both negative and affirmative arguments, 32 were adopted and 32 were rejected. These data show a negative association between the publication of an affirmative argument and adoption at the polls. The coefficient is $-0.19$ with a probable-error of 0.08. The chances are, then, that an affirmative argument is slightly associated with rejection at the polls. The significance of these somewhat curious results is hard to surmise. It seems though that

an argument for a measure is at least not associated with its success at the polls, while an argument against a measure seems definitely to be associated with its failure at the polls.

*The Length of Measures and Decisions at the Polls.* To know the length of the measures that have been submitted to the voters of Oregon through the medium of the initiative and referendum is important. It has been often remarked that the measures are too long. It is interesting, then, to observe that one half of the measures submitted are less than 400 words long, less than a page in length. Of the 101 measures submitted to the voters, 18 are less than 100 words in length and 36 are less than 200 words. Two thirds of the measures submitted are less than 800 words, or one and three fourths pages. However, there have been eight measures over five pages long and one of these contained more than a million words. In the measurement of the length of measures, all measures containing less words than the median, which was 400 words long, are called short measures and those measures of more than 400 words are considered long measures.

What is the degree of association between the length of measures and decisions at the polls? Do short measures tend to be adopted more readily? The coefficient of association * is +0.11 with a probable-error of 0.07. The chances are, then, that if there is any association between short measures and success at the polls it is so small as to be insignificant. The opinion that the voters are indifferent to the length of the measures is further strengthened by the coefficient of association between the sizes of the votes (large and small) and the length of measures (short and long). The coefficient of association† is +0.03. The association is so small as to be insignificant, and the length of the measures has nothing to do with the sizes of the votes.

*Agencies of Public Opinion and Decisions at the Polls.* The investigation, so far, has shown that the influences of certain forces on the voters, often considered to be strong are either negative or exist only to a small degree. This suggests that

* Of the short measures, 26 received large votes and 25 received small votes. Of the long measures, 24 received large votes and 26 received small votes.

† Of the short measures, 24 were adopted and 27 were rejected. Of the long measures, 18 were adopted and 32 were rejected.

the quality of the measures is the big determining force exerted upon the voters. This raises the question, as to what guidance exists for the voters in the matter of the quality of the measures and to what extent these respective guiding agencies really influence the voters. There are, of course, many such guiding agencies, the press, organizations, speakers, publications of literature. To measure the influence of each of these agencies is difficult. Only two such influences seem to admit of quantitative measurement; one is the influence of a newspaper, the *Oregonian*, and the other the influence of a civic organization, the Taxpayers' League. It has been the practice, during the later election periods, for these two institutions to publish prior to election day their recommendations to the voters on each measure. This is usually done by analyzing the measures and by giving reasons. These are eventually condensed to a recommendation of yes or no, and printed in a column sufficiently small to be taken to the polls by the voter. This practice has been in existence only since the number of measures submitted to the voters has been large; and there are some measures upon which there is no recommendation. This, of course, makes the numbers very small for statistical treatment.

The *Oregonian* has made 68 such recommendations and 39 of these have been the same as the decisions of the voters at the polls, making a coincidence in 57 per cent. of the instances. Of their recommendations for adoption, 8 measures were adopted and 12 were rejected. Of their recommendations for rejection 17 measures were adopted and 31 were rejected. The coefficient of association is $+0.05$; not significant. The Taxpayers' League has made 41 such recommendations and 31 of these have been the same as the voters' decisions, making a coincidence in 76 per cent. of the instances. Of their recommendations for adoption, 10 were adopted and 8 were rejected. Of their recommendations for rejection, 2 were adopted and 21 were rejected. The coefficient of association is $+0.57$ with a probable error of 0.10. This seems to indicate an association between the recommendations of the Taxpayers' League and the decisions of the voters at the polls. However, it should be

remembered that the number of cases is so small as to make the interpretation coefficients not certain.

To avoid the difficulty of such small numbers of cases, the data has been broadened to include city (Portland) measures, in addition to the state measures. Portland is the largest city of Oregon and possesses nearly one third of the population of Oregon. Portland has had a local initiative and referendum law since 1906. The seat of both the *Oregonian* and the Taxpayers' League is in Portland. If both city and state measures are included, the *Oregonian* has made 101 recommendations, 65 per cent. of which have coincided with the decisions of the voters. The coefficient of association* is +0.23 with a probable error of 0.10. Including both city and state measures, the Taxpayers' League has made 134 recommendations, 70 per cent. of which have coincided with the decisions of the voters. The coefficient of association† is +0.48. The interpretation of these data, then, leads to the conclusion that these two institutions exert a real influence on the decisions at the polls; the influence of the Taxpayers' League being somewhat stronger.

*Conclusions.* With regard to the results of this investigation, the associations measured stand as facts, subject, of course, to the probabilities due to the small number of cases. These are sufficiently indicated by the sizes of the coefficients and their errors. If the interpretation of the meaning of the coefficients extends further than the established associations, it becomes dependent on the meaning of the data, and varies according to personal interpretations. The range and possibility of this variation is not great, owing to the quantitative measurements. Remembering this, the results of this investigation may be summed up as follows:

It makes no difference to the voters at the polls whether a measure is a constitutional amendment or a bill.

The interest of the people in law-making has not diminished nor increased nor fluctuated. It has been constant and steady.

* Of the city and state measures recommended for adoption by the Oregonian, 17 were adopted and 16 were rejected. Of those recommended for rejection, 20 were adopted and 48 were rejected.

† Of the city and state measures recommended for adoption by the Taxpayers' League, 45 were adopted and 31 were rejected. Of those recommended for rejection 9 were adopted and 49 were rejected.

The interest of the voters, as shown by the sizes of the votes, is normal and shows no large and unusual force at work.

The variation of the sizes of the votes shows that the voters use discrimination in voting.

More measures are closely contested than not and the large amount of variation in the degree to which the measures are contested shows very decidedly that the voters use discrimination.

It makes no difference to the voters at the polls whether the measure is an initiative measure or a referendum measure.

Voters reject money-bills more readily than bills not calling for the expenditure of money. This tendency is very slight, however.

Voters are as interested in rejecting and adopting a measure vigorously as they are in passing a closely contested measure.

The people are less interested in measures, local in nature, and the chance of such a measure passing is not quite so good as a measure, general in nature. This may be interpreted as meaning that the people have a slight preference for the action of the state legislature on measures, local in nature.

The publication and distribution of arguments with the measure submitted does not increase the vote.

The publication of negative arguments alone and of affirmative arguments alone are associated with defeat at the polls.

The tendency is to submit short measures to the voters.

It makes no difference to the voters at the polls whether a measure is a long one or a short one.

The publication of recommendations by two agencies of public opinion influences the voters, but not to any very great extent.

The above-mentioned inflences on the voter, often considered strong, exist if at all only in a small degree. The big determining force on the voters is the quality of the measures.

## APPENDIX.

### *Initiative and Referendum Measures Voted on in Oregon.*

KEY.

(A) Constitutional amendment.
(a) Bill.
(B) Initiative measure.
(b) Referendum measure.
(C) Measure providing for expenditure of money.*
(c) Measure not providing for expenditure of money.
(D) Measure general in nature.*
(d) Measure local in nature.
(E) Long measure.*
(e) Short measure.
($F^1$) Measure published with an affirmative argument.*
($F^2$) Measure published with a negative argument.
($F^{12}$) Measure published with an affirmative and a negative argument.
(f) Measure published without an argument.
(G) Measure the adoption of which was recommended by the *Oregonian.**
(g) Measure the rejection of which was recommended by the *Oregonian.*
(H) Measure the adoption of which was recommended by the Taxpayers' League.*
(h) Measure the rejection of which was recommended by the Taxpayers' League.

| | *General Election, June 6, 1904.* | *Yes.* | *No.* |
|---|---|---|---|
| (aBCDEf) | Direct Primary Nominating Elections Law† | 56,205 | 16,354 |
| (aBcDEf) | Local Option Liquor Law | 43,316 | 40,198 |
| | *General Election, June 4, 1906.* | | |
| (abCDef) | General appropriation bill, State Institutions | 43,918 | 26,758 |
| (ABcDeF$^{12}$) | Equal Suffrage Amendment | 36,902 | 47,075 |
| (aBcDEf) | Amendment to Local Option Liquor Law | 35,297 | 45,144 |
| (aBCdef) | Purchase of Barlow toll road by State | 31,525 | 44,527 |
| (ABcDef) | Requiring referendum on any act calling a constitutional convention | 47,661 | 18,751 |

* The definitions of the different kinds of measures indicated by the key will be found in the text of the article to which this is an appendix.

† The order of the listing of the measures is the same as appeared on the ballot.

The titles of the measures presented here are abbreviated. This was done by the Secretary of State of Oregon.

| | | | |
|---|---|---|---|
| (ABcDef) | Giving cities sole powers to amend their charters | 52,567 | 19,852 |
| (ABcDef) | Authorizing State Printer's compensation to be regulated by law at any time | 63,749 | 9,571 |
| (ABcDef) | Initiative and referendum to apply to all local, special and municipal laws | 47,678 | 16,735 |
| (aBcDef) | Prohibiting free passes on railroads | 57,281 | 16,779 |
| (aBcDEf) | Gross earnings tax on sleeping, refrigerator and oil car companies | 69,635 | 6,441 |
| aBcDEf) | Gross earnings tax on express, telephone and telegraph companies | 70,872 | 6,360 |
| | *General Election, June 1, 1908.* | | |
| (AbCDefg) | To increase compensation of legislators from $120 to $400 per session | 19,691 | 68,892 |
| (AbcDefg) | Permitting location of State Institutions at places other than at the State Capital | 41,971 | 40,868 |
| (AbCDEfH) | Reorganizing system of Courts and increasing the number of Supreme Judges from three to five | 30,243 | 50,591 |
| (AbcDefgH) | Changing date of General Elections from June to November | 65,728 | 18,591 |
| (abcDef) | Giving sheriffs control of county prisoners | 60,443 | 30,033 |
| (abcDEF$^{2}$gh) | Requiring railroads to give public officials free passes | 28,856 | 59,406 |
| (abCDeF$^{1}$h) | Appropriating $100,000 for building armories | 33,507 | 54,848 |
| (abCDeF$^{12}$GH) | Increasing annual appropriation for University of Oregon from $47,500 to $125,000 | 44,115 | 40,535 |
| (ABcDeF$^{12}$) | Equal Suffrage | 36,858 | 58,670 |
| (aBcdEF$^{12}$g) | Fishery law proposed by fish wheel operators | 46,582 | 40,720 |
| (ABcDeF$^{12}$gh) | Giving cities control of liquor selling, pool-rooms, theatres, etc., subject to Local Option Law | 39,442 | 52,346 |
| (ABcDeF$^{1}$gh) | Modified form of single tax amendment | 32,066 | 60,871 |
| (ABCDEfg) | Recall power on public officials | 58,381 | 31,002 |
| (aBcDefg) | Instructing legislators to vote for the people's choice for United States Senator | 69,668 | 21,162 |
| (ABcDefg) | Authorizing proportional representation law | 48,868 | 34,128 |

| | | | |
|---|---|---|---|
| (aBcDEF[1]g) | Corrupt practices Act governing elections | 54,042 | 31,301 |
| (aBcdeF[12]g) | Fishery law proposed by gill-net operators | 56,130 | 30,280 |
| (ABcDeF[1]gH) | Requiring indictment to be by grand jury | 52,214 | 24,487 |
| (aBcdEF[1]) | Creating Hood River County | 43,948 | 26,778 |
| | *General Election, November 8, 1910.* | | |
| (ABcDeF[12]g) | Permitting female taxpayers to vote | 35,270 | 59,065 |
| (abCdEF[1]G) | Establishing branch insane asylum in eastern Oregon | 50,134 | 41,504 |
| (abCDEF[2]G) | Calling convention to revise State Constitution | 23,143 | 59,974 |
| (AbcDeF[2]G) | Providing separate district for election of each State Senator and representative | 24,000 | 54,252 |
| (AbcDeF[1]g) | Repealing requirement that all taxes shall be equal and uniform | 37,619 | 40,172 |
| (AbCDEF[1]g) | Permitting organized districts to vote bonds for construction of railroads by such districts | 32,844 | 46,070 |
| (AbcDefg) | Authorizing collection of State and County taxes on separate classes of property | 31,629 | 41,692 |
| (abCdefG) | Requiring Baker county to pay $1,000 a year to Circuit Judge in addition to his State salary | 13,161 | 71,503 |
| (aBcdEF[1]g) | Creating Nesmith County from parts of Lane and Douglas | 22,866 | 60,951 |
| (aBCdeF[1]) | To establish a State Normal School at Monmouth | 50,191 | 40,044 |
| (aBcdEF[1]g) | Creating Otis County from parts of Harney, Malheur and Grant | 17,426 | 62,016 |
| (aBcdEF[12]g) | Annexing part of Clackamas County to Multnomah | 16,250 | 69,002 |
| (aBcdEF[1]g) | Creating Williams County from parts of Lane and Douglas | 14,508 | 64,090 |
| (ABcDefg) | Permitting people of each county to regulate taxation for county purposes and abolishing poll taxes | 44,171 | 42,127 |
| (ABcDeF[12]) | Giving cities and towns exclusive power to regulate liquor traffic within their limits | 53,321 | 50,779 |
| (aBcDEF[1]g) | For protection of laborers in hazardous employment, fixing employers' liability, etc | 56,258 | 33,943 |

| | | | |
|---|---|---|---|
| (aBcdEF$^{12}$g) | Creating Orchard County from part of Umatilla | 15,664 | 62,712 |
| (aBcdEF$^{1}$g) | Creating Clark County from part of Grant | 15,613 | 61,704 |
| (aBCdeF$^{1}$) | To establish State Normal School at Weston | 40,898 | 46,234 |
| (aBcdeF$^{2}$g) | To annex part of Washington County to Multnomah | 14,047 | 68,221 |
| (aBCdEF$^{1}$) | To establish State Normal School at Ashland | 38,473 | 48,655 |
| (ABcDeF$^{12}$g) | Prohibiting liquor traffic | 43,540 | 61,221 |
| (aBcDEF$^{12}$g) | Prohibiting sale of liquors, and regulating shipments of same, and providing for search for liquors | 42,651 | 63,564 |
| (aBcDEF$^{2}$) | Creating board to draft employers' liability law for submission to legislature | 32,224 | 51,719 |
| (aBcdeF$^{12}$g) | Prohibiting taking of fish in Rogue River except with hook and line | 49,712 | 33,397 |
| (aBcdEF$^{12}$g) | Creating Des Chutes County out of part of Crook | 17,592 | 60,486 |
| (aBcDEF$^{1}$g) | Bill for general law under which new counties may be created or boundaries changed | 37,129 | 42,327 |
| (ABCDeF$^{1}$G) | Permitting counties to vote bonds for permanent road improvement | 51,275 | 32,906 |
| (aBCDEF$^{12}$g) | Permitting voters in direct primaries to express choice for President and Vice-President, to select delegates to national conventions, and nominate candidates for presidental electors | 43,353 | 41,624 |
| (aBCDEF$^{12}$g) | Creating board of people's inspectors of government, providing for reports of board in official State Gazette to be mailed to all registered voters bimonthly | 29,955 | 52,538 |
| (ABcDEF$^{12}$g) | Extending Initiative and Referendum, making terms of members of legislature 6 years, increasing salaries, requiring proportional representation in legislature, election of speaker of house and president of senate outside of members, etc | 37,031 | 44,366 |
| (ABcDEfg) | Permitting three fourths verdict in civil cases | 44,538 | 39,399 |
| | *General Election, November 5, 1912.* | | |
| (ABcDeF$^{12}$G) | Woman Suffrage Amendment | 61,265 | 57,104 |

| | | | |
|---|---|---|---|
| (AbCDeF$^{1}$GH) | Creating office of Lieutenant Governor | 50,562 | 61,644 |
| (AbcDeF$^{12}$GH) | Divorce of local and state taxation | 51,852 | 56,671 |
| (AbcDeF$^{12}$GH) | Permitting different tax rates on classes of property | 52,045 | 54,483 |
| (AbcDeF$^{12}$GH) | Repeal of County tax option | 63,881 | 47,150 |
| (AbcDeF$^{2}$h) | Majority Rule on constitutional amendments | 32,934 | 70,325 |
| (AbcDefGH) | Double liability on bank stockholders | 82,981 | 21,738 |
| (abcDEF$^{2}$GH) | State-wide public utilities regulation | 65,985 | 40,956 |
| (aBcdEF$^{12}$g) | Creating Cascade County | 26,463 | 71,239 |
| (aBCDEF$^{12}$GH) | Millage tax for University and Agricultural College—Simple tax law | 48,701 | 57,279 |
| (ABcDEF$^{12}$h) | Majority Rule on initiated laws | 35,721 | 68,861 |
| (aBCDEF$^{1}$h) | County bonding and road construction act,—Grange Bill | 49,699 | 56,713 |
| (aBCDEF$^{1}$h) | Creating State Highway Department —Grange Bill | 23,872 | 83,846 |
| (aBcDeF$^{2}$gh) | Changing date State Printer Bill Became effective | 34,793 | 69,542 |
| (aBCDEF$^{2}$gh) | Creating office of Hotel Inspector | 16,910 | 91,995 |
| (aBcDEfg) | Eight hour day on public works | 64,508 | 48,078 |
| (aBcDEF$^{12}$gh) | Blue Sky Law | 48,765 | 57,293 |
| (aBcDefgH) | Prohibiting private employment of convicts | 73,800 | 37,492 |
| (aBcDEfgH) | Relating to employment of county and city prisoners | 71,367 | 37,731 |
| (aBCDEfH) | State road bonding act | 30,897 | 75,590 |
| (ABcDefH) | Limiting state road indebtedness | 59,452 | 43,447 |
| (aBCDEfH) | County bonding act | 43,611 | 60,210 |
| (ABcDefH) | Limiting county road indebtedness | 57,258 | 43,858 |
| (aBcDEfGh) | Providing method for consolidating cities and creating new counties | 40,199 | 56,992 |
| (ABcDeF$^{2}$GH) | Income tax amendment | 52,702 | 52,948 |
| (aBcDEF$^{12}$Gh) | Tax exemption on household effects | 60,357 | 51,826 |
| (aBcDeF$^{12}$gh) | Tax exemption on moneys and credits | 42,491 | 66,540 |
| (aBcDEF$^{12}$gh) | Revising inheritance tax laws | 38,609 | 63,839 |
| (aBcDEfgh) | Freight rates act | 58,306 | 45,534 |
| (ABCDEF$^{1}$h) | County road bonding act | 38,568 | 63,481 |
| (ABcDEF$^{12}$gh) | Abolishing Senate; proxy voting; U'Ren Constitution | 31,020 | 71,183 |
| (ABcDEF$^{12}$gh) | State-wide Single Tax with graduated tax jug handle | 31,534 | 82,015 |
| (aBcDefg) | Abolishing capital punishment | 41,951 | 64,578 |
| (aBcDEF$^{2}$h) | Prohibiting boycotting | 49,826 | 60,560 |
| (aBcDeF$^{2}$Gh) | Giving mayor authority to control street speaking | 48,987 | 62,532 |
| (abCDefGh) | Appropriation for University | 29,437 | 78,985 |
| (abCDefGh) | Appropriation for University | 27,310 | 79,376 |

# EDUCATION AND FECUNDITY.

By Nellie Seeds Nearing.

## I. The Increase in the Higher Education of Women.

In the effort to analyze a popular prejudice or fallacy, an adequate investigation of facts is usually sufficient to reveal the origin of such prejudice in previously existing conditions which have altered so gradually with time, that society as a whole has hardly yet become aware of the change. In such a category we might include many of the fallacies concerning the position and faculties of women.

A hundred years ago, the higher education of women was an unheard of phenomenon. Women were intended to bear children. What need had they of an education! Marriages were then contracted at an early age, usually in the teens or early twenties, and as an advanced education precluded the possibility of an early marriage, it seemed to preclude possibility of marriage at all.

The average woman, therefore, who went to college in the early days of college training for women, was not the type who would have been apt to marry in any case. The first classes of college women consisted largely of the woman who had some special talent which she wished to develop and practice, the woman of strong intellectual proclivities, who preferred not to engage in the domestic occupations usually relegated to women, and the woman who, because of personal unattractiveness, knew or feared her lack of popularity among men.

The later experiences of women's colleges are quite the opposite of those early encountered. Today it is the normal, not the unusual girl who goes to college or technical school. College education is considered generally desirable as a means of finishing the education of the average woman. It gives culture. It has become a common comfort, if not a necessity, for young women of means.

The developments of the last twenty years have placed before the parents of all classes a powerful incentive to give

their daughters the best in education that can be secured. Are parents today recognizing these facts and educating their daughters as well as their sons? What are the facts? After they have been ascertained, the second question may be asked —Does this increase of education have any appreciable effect upon fecundity?

The facts point conclusively to a rapid advance in the higher education of women. In the first place a larger number of girls than of boys are being given a high school education in the cities of the United States. Among 318 cities of the United States, 132 having 25,000 population and over, 186 having less than 25,000 population, twenty report more boys than girls in the fourth year of the high school. These twenty, moreover, are small and comparatively unimportant. In all the other 298 cities the number of girls is uniformly greater than that of boys.*

Although the number of girls in the high schools almost universally exceeds the number of boys, the situation in the elementary grades is the reverse. A school census of thirty-two states (1911) shows that in only one state—New Hampshire—were there more girls than boys in all grades of the schools†. In only eight out of these thirty-one states, however, did the difference between the number of boys and number of girls exceed 10,000. The school system in its entirety contains a higher proportion of boys than of girls. It is only in the high school grades that the number of girls exceeds the number of boys. Clearly then, girls are availing themselves more fully of the public higher educational opportunities than are boys.

The real extent of the entrance by women into the fields of higher education is shown by a study of the statistics of college students. The movement toward the college education of women is so recent, and the opportunities for such education so much smaller than for that of men, that some years must still elapse before the absolute number of girls in college ap-

* Age and grade census of Schools and Colleges, G. D. Strayer, United States Bureau of Education Bulletin 1911, No. 5, pp. 14-28.

† Report of United States Commissioner of Education, 1911-1912, Government Printing Office, 1913 Vol. 2, p. 93.

proaches the absolute number of boys there. The vital question therefore is the rate of increase in the number of women attending college each year and the rate of increase in the number of men. The figures are available between 1889–1912 for the number of men and women in colleges of the United States.* A comparison of these figures, first by ten year periods, then for the total period, shows that the ratio of increase is far greater for the women than for men.

TABLE I.

PER CENT. OF INCREASE IN THE NUMBER OF MEN AND WOMEN IN THE COLLEGES OF THE UNITED STATES, 1889–1912.

| Period. | Men. | Women. |
|---|---|---|
| 1890–1891 to 1900–1901 | 64 | 77 |
| 1900–1901 to 1910–1911 | 58 | 66 |
| 1889–1890 to 1911–1912 | 179 | 248 |

A further examination of the figures shows that the proportion of men to the total number of college students is steadily decreasing, and inversely the proportion of women steadily increasing.

TABLE II.

PROPORTION OF MEN IN COLLEGE TO TOTAL COLLEGE STUDENTS, 1889–1912.

| Period. | Per Cent. |
|---|---|
| 1890–1891 | 68 |
| 1900–1901 | 66 |
| 1910–1911 | 64 |
| 1911–1912 | 63 |

Here then is an answer to the first question regarding the higher education of women. The number of women in the United States receiving higher education is absolutely and relatively increasing in the colleges, while in the high schools

* Total number of men and women in the colleges of the United States, 1889–1912. Report of the Commissioner of Education, 1911–1912, Government Printing Office, 1913, Vol. 2, p. 249.

| | | |
|---|---|---|
| 1889–1890 | 44,926 | 20,874 |
| 1890–1891 | 46,220 | 22,036 |
| 1900–1901 | 75,472 | 38,900 |
| 1910–1911 | 119,026 | 64,546 |
| 1911–1912 | 125,750 | 72,703 |

the number of girl students actually exceeds the number of boy students. What effect, if any, has this general entrance of women into the fields of higher education upon the marriage and birth rates of the women? An answer, scientifically established, will put to rest popular prejudice and speculative theory.

## II. Marriage Rates of Educated Women.

Marriage is the first element in fecundity which must be considered and investigated. Illegitimate births are few among the educated classes, and the statistics of such births even in the population at large, never exact, probably do not even approximate the truth. Hence this discussion will ignore the whole question of illegitimacy, and consider marriage as the necessary precursor to motherhood.

The method adopted in obtaining the statistics of marriage among college women was as follows: From a list of all the colleges in the United States, classified according to states, in the report of the United States Commissioner of Education for 1911–1912, showing in all 459 colleges having women students, seventy-two colleges were selected from twenty-eight states, an effort being made to select those having the largest number of women students. The women in these colleges are representative, both territorially and numerically, of the college women of the United States. The colleges were selected from various localities. The total number of women students in these seventy-two colleges was 40,653 or 36 per cent. of the total number of women college students in the United States.

A form letter was written to the registrar of each of these colleges asking for any vital statistics which had been collected, or which might be available in any form. Twenty-nine colleges replied that no such statistics were available, 18 sent no reply, and 25 colleges sent such information as they had, which information in 7 cases proved of no value. The material at hand was then carefully gone over and compiled into marriage rate and birth rate tables for each college.

The marriage tables for each college were then combined into two tables giving by decades first the number and second the per cent. of married and unmarried graduates from 18 colleges having a total of 14,551 women graduates.

TABLE III.

*NUMBERS OF WOMEN GRADUATES AND NUMBER OF SUCH GRADUATES MARRIED FOR CERTAIN COLLEGES, BY COLLEGE AND BY DECADES, 1870–1913.

| College. | 1870–79. | | 1880–89. | | 1890–99. | | 1900–09. | | 1910–12. | | Total to 1912. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Number Graduate. | Number Married. | Number Graduate. | Number Married. | Number Graduate. | Number Married. | Number Graduate. | Number Married. | Number Graduate. | Number Married. | Number Graduate. | Number Married. |
| Earlham | 23 | 13 | 43 | 33 | 132 | 80 | 200 | 103 | 15 | 10 | 473 | 239 |
| Swarthmore | 31[4] | 21 | 72 | 42 | 148 | 86 | 260 | 103 | 109 | 4 | 620 | 262 |
| Wilson | 36 | 20 | 42[2] | 23 | 219 | 123 | 309 | 95 | 140 | 2 | 746 | 266 |
| Indiana | 35 | 30 | 56 | 40 | 228 | 126 | 482 | 164 | | | 887 | 366 |
| Vassar | 383 | 203 | 376 | 208 | 791 | 120 | 1,874 | 500 | | | 3,424 | 1,287 |
| Oregon | | | 34 | 19 | 84 | 523 | 151 | 63 | | | 269 | 136 |
| Radcliffe | | | 30 | 12 | 253 | 37 | 746 | 228 | 228 | 16 | 1,257 | 376 |
| Wellesley | | | 318 | 257 | 1,201 | 123 | | | | | 1,719 | 780 |
| South Dakota | | | | | 47 | 3 | 733 | 33 | 23 | 5 | 153 | 84 |
| Bryn Mawr | | | | | 294 | 158 | 688 | 244 | | | 1,193 | 392 |
| Mississippi | | | 12[5] | 7 | 10 | | 48 | 8 | | | 70 | 18 |
| Holyoke | † | | | | 377 | | | | | | | |
| Washington State | | | | | | | 82 | 34 | 83 | 13 | 174 | 56 |
| Rochester | | | | | | | 135[3] | 30 | | | 135 | 40 |
| Ohio | | | | | | | | | | | 52 | 32 |
| Oregon Agricultural | | | | | | | | | | | 398 | 206 |
| Rockford | | | | | | | | | | | 237[6] | 134 |
| Smith | | | | | | | | | | | 2,161[6] | 1,016 |

TABLE IV.

PER CENT. OF WOMEN COLLEGE GRADUATES WHO MARRIED, FOR CERTAIN COLLEGES, BY COLLEGES AND BY DECADES, 1870–1913.

| College. | 1870–79. | 1880–89. | Per Cent. of Graduates Married. | | | Total Graduates to 1912. |
|---|---|---|---|---|---|---|
| | | | 1890–99. | 1900–09. | 1909–12. | |
| Earlham | 56.9 | 76.7 | 60.6 | 51.5 | 13.3 | 50.5 |
| Swarthmore | 67.7 | 58.3 | 58.7 | 39.6 | 3.6 | 42.2 |
| Wilson | 55.5 | 54.7 | 56.1 | 30.7 | 1.4 | 35.6 |
| Indiana | 85.7 | 71.4 | 55.2 | 34.9 | | 41.2 |
| Vassar | 53.0 | 55.3 | 47.5 | 26.6 | | 37.5 |
| Oregon | | 55.8 | 64.2 | 41.7 | | 50.5 |
| Radcliffe | | 40.0 | 47.4 | 30.5 | 7.0 | 29.9 |
| Wellesley | | 49.6 | 43.5 | | | 45.3 |
| South Dakota | | | 78.7 | 21.7 | | 54.9 |
| Bryn Mawr | | | 41.8 | 35.4 | | 32.8 |
| Mississippi | | 58.3 | 30.0 | 16.6 | | 25.7 |
| Holyoke | | | 41.9[1] | 23.6[3] | | |
| Washington State | | | | 41.4 | 15.6 | 32.1 |
| Rochester | | | | 22.2 | | 22.2 |
| Ohio | | | | | | 61.5 |
| Oregon Agricultural | | | | | | 51.7 |
| Rockford | | | | | | 56.1 |
| Smith | | | | | | 47.0 |

*Since 1873. [2]Since 1883. [3]Since 1901–10. [4]Since 1873. [5]Since 1885. [6]To 1901.
†Secured from an article by Amy Hewes, Quarterly Publication of American Statistical Association, Vol. XII, p. 771.

In only five cases were figures available for the decade 1870–79. In only nine cases were they available from 1880–89. In view of the fact, further, that the marriage rate of those graduating since 1900 would still necessarily be low because such graduates would be under 35 years of age, the most representative decade under consideration would be that from 1890–99. Here the absolute number of women graduates is greater than in any preceding decade, although less than in any succeeding decade. The per cent. of marriage here averages, on the whole, considerably lower than that of the previous decades in the colleges from which such information is available. It is probable, therefore, that the per cent. in this decade would give a conservative estimate of the rate for college women. It varies from 78.7 in South Dakota State College to 30 per cent. in the University of Mississippi—neither of these colleges being representative, graduating between them in the decade only 57 students. If we compare the per cent. for this decade with that of the following, we find an average fall of 20 while the average fall from the per cent. of 1900–09 to that which was estimated in a few cases for 1909–1912 was 25 per cent.

The totals are comparatively meaningless. This statement applies to both the absolute number and to the proportion of graduates married. Both the total number of graduates married in each college (and in some colleges this was the only information available), and the proportion married must be considered in view of the fact that the results are obtained from a body of students of whom a large number have yet had little opportunity for marriage, and whose marriage rate when estimated separately was from 20 to 25 per cent. lower than that in the previous decade. It must be remembered, moreover, that as each graduating class is in almost every case larger than the preceding one, the denominator of the fraction is every year being increased at a greater rate than the numerator. On the other hand, this marriage per cent. of the entire number of graduates of a college includes in the older colleges those who have graduated in the decades previous to 1890, and whose marriage rate averages, where figures are obtainable, over 15 per cent. higher in 1880–89 than in 1890–99 and

5 per cent. higher in 1870–79 than in 1880–89. Balancing off the 20 and 25 per cent. fall in the rate from 1890 to 1913, and 15 and 5 per cent. increase previous to 1890 and taking into account that the fall was for a far greater absolute number than the increase, because of the yearly increase in size of classes, we may assume that in cases where the marriage rate by classes was not obtainable, the rate for those graduating in the decade 1890–99 is at least 10 per cent. higher than the rate for the entire body of graduates.

The earliest years, as already indicated, are scarcely representative. Yet there seems to be little real difference between the percentages there and in later decades. Of the 9 colleges which supply us figures for the decade 1880–1889, 2 show percentages of married graduates in excess of 70 per cent. In neither of these colleges was the total number of graduates large (Earlham 43, Indiana 56). The other 7 colleges report marriage rates varying less than 10 points. The 2 large colleges, Vassar and Wellesley (376 and 518 graduates respectively), report a marriage rate for the decade of 55.3 in the case of Vassar and 49.6 in the case of Wellesley. The decade 1890 to 1899 is undoubtedly the most fairly representative of any of the decades under consideration. On the one hand, it falls within the epoch which accepted College Education for women, and looked upon it as thoroughly respectable. On the other hand, the graduates in the latest graduating class (class of 1899) are now at least 35 years of age. The marriage record of the decade is therefore fairly complete. The 8 colleges graduating more than 100 students during the decade (Earlham, Swarthmore, Wilson, Indiana, Vassar, Radcliffe, Wellesley, and Bryn Mawr) show fairly uniform marriage rates, the lowest is Bryn Mawr, 41.8 per cent. (294 graduates), and the highest is Swarthmore, 58.7 per cent. (148 graduates). It is probable that the marriage rate for this decade is fairly representative of the tendency in the modern women's college world. Granted that this statement is accurate, it may be said that the proportion of women college graduates who marry is approximately one half (usually slightly over 50 per cent.).

The records of the succeeding decade show a heavy falling off in per cent. of women married. The women in the class

of 1909 are approximately 25 years old. The marriage records are therefore incomplete and wholly unreliable. The proportion married for this decade is from one quarter to one third of the total graduates, and is therefore almost one half of the pupils reported for the previous decade.

This study was originally intended to study in three classes: (1) The college woman, (2) The normal school graduate, and (3) The commercial high school graduate, and to compare the marriage and birth rates prevailing among the three. With this end in view a form letter similar to that sent to the colleges was sent to leading high and normal schools throughout the country. Only six replies were received and in only 2 of these cases was any information vouchsafed. Obviously these figures were of no practical use.

The only other group educationally on a par with women college graduates, for whom statistics are obtainable, is the groups of men college graduates. The *Yale Review* gives us the following marriage rate for Yale graduates:

TABLE V.

PER CENT. OF YALE GRADUATES WHO WERE MARRIED, 1701–1886.

| Classes. | Per Cent. Married. |
|---|---|
| 1701–1791 | 88.3 |
| 1797–1833 | 78.8 |
| 1834–1849 | 81.2 |
| 1849–1866 | 81.3 |
| 1867–1886 | 66.3 |

The figures for the classes 1867–1886 are the only ones in any way comparable with the figures for woman college graduates. Since the question of social standing did not enter into the marriage rate of college men during the earlier decades, their marriage rate for the earliest decades would be expected to be somewhat higher than that of college women.

The only remaining comparison to be made is that between the marriage rate of college women and the marriage rate of the population at large.

TABLE VI.

PER CENT. MARRIED.* TOTAL NUMBERS AND PERCENTAGES OF WOMEN, 15 YEARS OF AGE AND OVER, TOGETHER WITH THOSE WHO ARE MARRIED AND WHO ARE SINGLE, 1910.

| | Total. | | Married. | | Single. | |
|---|---|---|---|---|---|---|
| | Number. | Per Cent. | Number. | Per Cent. | Number. | Per Cent. |
| Total: | | | | | | |
| Native white | 30,047,325 | 100 | 21,045,983 | 70.0 | 8,933,170 | 29.7 |
| Native parentage | 15,523,900 | 100 | 10,842,998 | 69.8 | 4,644,122 | 29.9 |
| Native white, foreign or mixed parentage | 5,887,131 | 100 | 3,421,147 | 58.1 | 2,453,017 | 41.7 |
| Foreign-born white | 5,446,306 | 100 | 4,444,657 | 81.6 | 994,110 | 18.3 |
| Negro | 3,103,344 | 100 | 2,269,066 | 73.1 | 823,996 | 26.6 |

Since the great majority of women college graduates are native-born, the only figures here with which comparison can be made are those referring to native whites of native parents. As authority for this assumption, I might quote an investigation covering 1,290 college graduates in which 705 replied, practically all of whom were native born:

83.3 per cent. had native American parents.
2.8 per cent. had foreign mother and native father.
3.5 per cent. had foreign father and native mother.
only 9.8 per cent had both parents foreign born.

The following figures then stand contrasted:

*Women 15 Years and Over.* *Per Cent. Married.*
(native white, native parents)..69.8 (figures taken 1910).
College graduates to 1913.....42.2 (figures taken 1913).

In view of the fact that a small proportion of college graduates (about 15 per cent.) are of foreign or mixed parentage, and that the marriage rate for the population at large for native white women of foreign parentage is 58.1 per cent., hence lower than that for native white of native parentage, the 42.2 per cent. of college graduates should really be compared with a figure obtained by including 15 per cent. of those with foreign or mixed parentage, thus lowering the rate slightly. In other words, if

*Abstract of the Thirteenth Census.

we add to the 15,525,900 of native white parentage 15 per cent. of the 5,887,131 of mixed parentage, or 883,069 and to the 10,842,998 married of native white parentage, 58 per cent. (the foreign parentage rate) of this 883,069, or 158,925, we get a total of 11,001,950 women married out of total 16,406,969. This would give a marriage per cent. of 67. We can then make our contrast between 67 per cent. for the whole population and 42.2 per cent. for college graduates.

These figures show that the marriage rate for non-college women is 59 per cent. higher than the rate for college women. This would seem on the face of it, to be a tremendous difference, but it cannot be attributed solely to the difference in education. There are two other factors that play a large part in the situation. First comes the financial situation. In the second place, social considerations are of the utmost importance in determining marriage and usually act in actual practice as deterrents rather than incentives. The standards of living among educated people are higher, and their requirements harder for the prospective husband to meet. These two factors might and do contribute toward the comparatively low marriage rate of college women.

No other available figures throw light on the marriage rate, actual or comparative, of college women. College women do marry, probably in fifty cases out of a hundred, given sufficient time out of college.

## III. Birth Rates of Educated Women.

Like the statistics of marriage, the most satisfactory statistics of the birth rate among educated women are those of college graduates. Out of the 58 replies from the 71 colleges written to, only 5 vouchsafed any information from which a birth rate could be deduced. In addition, information concerning 4 other colleges was obtained indirectly. Thus the source from which the figures were drawn is small in comparison with the entire field. The colleges included in it are, however, the most representative of American colleges for women. The following table gives a number of the most pertinent facts about the birth rates of college women:

TABLE VII.

MARRIAGE RATES AND BIRTH RATES OF COLLEGE GRADUATES.

| College. | Time Covered. | Number of Graduates. | Married. | | Those Married Having One Child or More. | | Those Married Having Two Children or More. | | Those Married Having No Children. | | Absolute Number of Children. | Number of Children per 100 Graduates. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number. | Per Cent. | Number. | Per Cent. | Number. | Per Cent. | Number. | Per Cent. | | Total. | Married. |
| Rockford | 1870–1901 | 327 | 134 | 56.5 | 97 | 72.3 | 71 | 52.9 | 37 | 20.1 | .... | .... | .... |
| Smith | 1870–1901 | 2,161 | 1,016 | 47.0 | 681 | 67.0 | 449 | 44.1 | 335 | 32.9 | .... | .... | .... |
| Wellesley | 1875–1901 | 1,864 | 840 | 45.0 | .... | .... | .... | .... | .... | .... | 1,285 | 59.4 | 126.4 |
| Vassar | 1867–1901 | 1,880 | 961 | 51.1 | 662 | 68.8 | 461 | 47.9 | 289 | 30.0 | 1,579 | 83.9 | 164.3 |
| Bryn Mawr | 1890–1901 | 373 | 178 | 47.7 | 125 | 69.0 | 95 | 53.3 | 53 | 29.7 | 307 | 82.4 | 172.4 |
| Holyoke | 1890–1899 | 377 | 158 | 41.9 | | | | | | | 288 | 76.3 | 182.3 |
| Smith<br>Bryn Mawr<br>Vassar<br>Wellesley<br>Wells<br>Radcliffe<br>Rockford<br>Northwestern | 1870–1901* | 7,660 | 3,594 | 47.0 | 2,464 | 68.5 | 1,665 | 46.3 | 1,130 | 31.4 | .... | .... | .... |

* Article of Mrs. Valentine in Smith Alumnae Quarterly, July, 1911, published by the Alumnae Association of Smith College.

From this table it appears that the per cent. of married college graduates having one or more children varies from 67 per cent. at Smith to 72.3 at Rockford College. In all cases the period covered is approximately the same (Bryn Mawr is the sole exception). In all cases the percentage by one or more children is remarkably uniform. The per cent. having two or more children varies from 44.7 at Smith to 53 at Bryn Mawr. The per cent. of married graduates having no children varies from 20.1 per cent. at Rockford to 32.9 per cent. at Smith. Thus we find the birth rate is lowest at Smith, highest at Rockford, with Bryn Mawr as a median.

This table of marriage rates and birth rates gives the figures from approximately the beginning of each college down to 1901. In the case of Bryn Mawr and of Holyoke, however, the founding of them was at a much later date than that of the others. (Holyoke existed as a Seminary only, prior to 1890.) Since therefore neither of these colleges has the body of older graduates that the other colleges have, we should expect to find marriage and birth rates correspondingly lower. Since this is not the case in the birth rates at Bryn Mawr, we may assume a somewhat higher birth rate there in proportion to the other colleges, than is shown by the figures. Since the figures for the 8 colleges whose combined records appear show a slightly lower birth rate than the median taken from the entire table, we may assume a slightly lower rate for the colleges included in it, Wells, Radcliffe, Northwestern, whose separate figures were not obtainable, than for the colleges for which separate figures were secured.

A comparison of the absolute number of children in each case with the number of graduates in the 4 colleges from which these figures were obtainable, shows the following results: Smith 59.4, Vassar 83.9, Bryn Mawr 82.3, and Holyoke 76.3 children per 100 graduates. This rate apparently falls far short of properly maintaining the population. The small percentage of marriages among graduates, coupled with the low birth rate spells population decline. If, however, the matter is viewed from the standpoint of the married college graduate, the story is much better. A comparison of the number of married graduates with the number of children gives

the following result per one hundred married graduates: Smith 126.4, Vassar 164.3, Bryn Mawr 172.4, and Holyoke 182.3 children. These figures average about 1.6 children per married graduate.

TABLE VIII.

MARRIAGE AND BIRTH RATES OF CERTAIN COLLEGES BY DECADES.

| Classes. | College. | Number of Graduates. | Married. | | Total Number of Children. | Number of Children per 100 Graduates. | Number of Children per 100 Married Graduates. |
|---|---|---|---|---|---|---|---|
| | | | Number. | Per Cent. | | | |
| 1870 to 1879 | Vassar | 383 | 203 | 53. | 422 | 110.1 | 207.8 |
| | Bryn Mawr | | | | | | |
| | Wellesley | | | | | | |
| 1880 to 1889 | Vassar | 376 | 208 | 55.3 | 348 | 93.5 | 167.3 |
| | Bryn Mawr | | | | | | |
| | Wellesley | 518 | 257 | 49— | 427 | 82.3 | 166.1 |
| 1890 to 1899 | Vassar | 791 | 376 | 47.5 | 553 | 69.9 | 147.0 |
| | Bryn Mawr | 294 | 123 | 41.8 | 211 | 71.7 | 171.5 |
| | Wellesley | 1,201 | 523 | 43.5 | 776 | 64.6 | 110.1 |
| | Holyoke | 377 | 158 | 41.9 | 288 | 76.3 | 182.3 |
| 1900 to 1909 | Vassar | 1,874 | 500 | 26.6 | 344 | 18.3 | 68.8 |
| | Bryn Mawr | 688 | 244 | 35.4 | 189 | 27.6 | 77.4 |
| | Wellesley | | | | | | |
| | Holyoke | 1,206 | 285 | 23.6 | 260 | 21.5 | 91.2 |

It is apparent that not even in the decade 1870–79 was the birth rate high enough to maintain the population, when both the unmarried graduates and the husbands of the married graduates are taken into account. The rate in the next two decades declines for Vassar and Smith to 92.5 and 82.4 children respectively per 100 graduates. In the following decade these two colleges decline to 69.9 and 64.6 respectively, but Bryn Mawr and Holyoke here began their existence, and their rates for the classes of this decade are slightly higher than the two others. In the decade 1900–1909 the rate is very low owing to recent graduation, and the figures are not worth consideration.

Only 2 colleges (Vassar and Bryn Mawr) give any detailed information regarding the size of families. Of these colleges, Vassar alone has been in existence long enough to show any marked change in family size.

TABLE IX.

SIZE OF FAMILIES OF WOMEN COLLEGE GRADUATES.

| College and Period. | Total Married Graduates. | Number of Married Graduates Having Each of the Following Number of Children. | | | | | | | | Total Children. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | One. | Two. | Three. | Four. | Five. | Six. | Seven. | Eight. | |
| Vassar: | | | | | | | | | | |
| 1867–1901..... | 961 | 201 | 209 | 143 | 61 | 29 | 11 | 6 | 2 | 289 |
| 1867–1910..... | 1,323 | 316 | 244 | 146 | 61 | 29 | 11 | 6 | 2 | 503 |
| Bryn Mawr: | | | | | | | | | | |
| 1890–1912..... | 380 | 86 | 84 | 47 | 14 | 11 | 3 | | | 135 |
| Vassar: | | | | | | | | | | |
| 1867–1876..... | 181 | 24 | 26 | 35 | 20 | 14 | 5 | 2 | 1 | |
| 1877–1886..... | 207 | 33 | 40 | 33 | 17 | 7 | 5 | 3 | 1 | |
| 1887–1896..... | 273 | 57 | 74 | 44 | 17 | 8 | | | | |
| 1897–1901..... | 276 | 87 | 69 | 31 | 17 | | | | | |

It will here be seen in the case of Vassar that the size of families has been smaller since 1901 than previous to that date. No Vassar graduate since that date has had a family of over three children, and only three have had a family of three. Vassar graduates since 1890 have had no families of six, six families of five, and eighteen families of four children each. The figures of Bryn Mawr, therefore, while they seem lower on the table, are really not so for the same period of years.

The last table which seems of value is published in the Bryn Mawr catalogue for 1913, page 298.

TABLE X.

NUMBER OF MARRIAGES AMONG BRYN MAWR GRADUATES AND NUMBER OF CHILDREN BORN, BY YEAR OF MARRIAGES, 1890–1912.

| Year of Marriage. | Duration of Marriage in Years. | Number of Graduates Married Each Year. | Number of Children. | | | Average per Marriage. |
|---|---|---|---|---|---|---|
| | | | Boys. | Girls. | Total. | |
| 1890 | 22–23 | 1 | 1 | 2 | 3 | 3.0 |
| 1891 | 21–22 | 4 | 5 | 5 | 10 | 2.5 |
| 1892 | 20–21 | 2 | 0 | 3 | 3 | 1.5 |
| 1893 | 19–20 | 3 | 6 | 8 | 14 | 4.7 |
| 1894 | 18–19 | 5 | 5 | 4 | 9 | 1.8 |
| 1895 | 17–18 | 9 | 7 | 9 | 16 | 1.8 |
| 1896 | 16–17 | 3 | 6 | 2 | 8 | 2.7 |
| 1897 | 15–16 | 4 | 7 | 3 | 10 | 2.5 |
| 1898 | 14–15 | 5 | 12 | 9 | 21 | 4.2 |
| 1899 | 13–14 | 14 | 6 | 10 | 16 | 1.1 |
| 1900 | 12–13 | 12 | 14 | 14 | 28 | 2.3 |
| 1901 | 11–12 | 13 | 18 | 14 | 32 | 2.5 |
| 1902 | 10–11 | 10 | 13 | 8 | 21 | 2.1 |
| 1903 | 9–10 | 15 | 11 | 15 | 26 | 1.7 |
| 1904 | 8–9 | 23 | 31 | 32 | 63 | 2.7 |
| 1905 | 7–8 | 29 | 29 | 24 | 53 | 1.8 |
| 1906 | 6–7 | 36 | 23 | 34 | 57 | 1.6 |
| 1907 | 5–6 | 29 | 18 | 17 | 35 | 1.2 |
| 1908 | 4–5 | 30 | 22 | 11 | 33 | 1.1 |
| 1909 | 3–4 | 28 | 16 | 18 | 34 | 1.2 |
| 1910 | 2–3 | 31 | 3 | 15 | 18 | 0.6 |
| 1911 | 1–2 | 34 | 8 | 6 | 14 | 0.4 |
| 1912 | Under 1 | 52 | 0 | 0 | 0 | 0.0 |
| 1890 to 1912 | | 392 | 261 | 263 | 524 | 1.3 |

We here have an opportunity for the first time to compare the number of children with the duration of the marriage. The average number of children per family of ten or more years' duration is 2.7, showing a rate slightly higher than that necessary to maintain a static population, provided no deaths occur. Holyoke gives a similar figure here, showing an average of 2.43 children born to each of 439 married graduates of the decade 1890–99.

Available figures dealing with the fecundity of college women are few in number and narrow in scope—the same data are not given in every case, and comparison is difficult. Figures for the past deal with the number of graduates having children, rather than the number of children, hence the difficulty of showing accurate details of the number of children per marriage. Since in each case, of the five colleges furnishing the best data, Bryn Mawr was nearest to the median, her figures can reasonably be assumed to represent the approximate situation in those colleges not giving complete data (Smith and

Rockford). Since further, the Bryn Mawr table for duration of marriage shows that all marriages of over ten years' duration average 2.7 children, the following conclusion may be drawn:

1. Where all college graduates are included up to date the number of children per graduate would be slightly above three fourths, the number per married graduate would be approximately one and one half.

2. Where only those graduates who have been graduated a sufficient number of years to allow for marriage and all probable family increase, are considered, the rate would be approximately 2 to 2½ children per family.

So much for the available figures for college graduates. Of all possible comparisons, the fairest, in fact the only fair comparison, is with the sisters, cousins, and friends of these college women, who did not themselves attend college. Here social and economic considerations would have equal weight, and any difference in rate would most probably be traceable to the college training.

Mary Roberts Smith in an article on the Statistics of College and Non-College Women (1900)* has made such a study and obtained from it valuable conclusions. Schedules were sent by her to 343 college mothers and 313 non-college mothers who were their sisters, cousins, and friends. She summarizes her conclusions as follows:

1. The marriage of college women was postponed two years as compared with that of non-college women (26.3 *vs.* 24.3 years).

2. The age of marriage for both classes has been growing in the last thirty years,—a larger per cent. of the non-college mothers marrying before the age of 21; a larger per cent. of the college mothers marrying after 34.

3. The non-college women have been married an average of 2 years longer than the college women and have borne a slightly larger number of children, but the college women have borne the larger number of children per year of married life.

* Quarterly Publications of the American Statistical Association, No. 49–50, Volume VII, March–June, 1900, p. 1.

Significant comparison may be made between the men. If we compare the fecundity of Yale graduates to the fecundity of women college graduates, we get the following results.*

TABLE XI.

A COMPARISON OF THE BIRTH RATES OF YALE AND VASSAR GRADUATES, CLASSES OF 1867 TO 1886 INCLUSIVE. NUMBER OF CHILDREN PER MARRIED GRADUATE.

| | |
|---|---|
| Yale: | |
| 1867–1886 | 2.02 |
| Vassar: | |
| 1867–1886 | 1.09 |

Another interesting comparison might be made between women college graduates and women graduates of normal and high schools, who did not go to college, but here again it is rendered impossible by the fragmentary character of the material. Authoritative data was secured for only two classes and conclusions from them would carry little weight.

A comparison of college birth rates with those of the population at large are of little value because of the differences in age, sex, social and economic position. Moreover, statistics of the population at large in the United States have never been compiled. In the registration area, where some work has been done, imperfect registration of birth renders the figures of somewhat doubtful value.

One study, however, has been made which gives us comparable figures from the population at large. I refer to an article by Dr. Joseph A. Hill in the QUARTERLY PUBLICATIONS OF THE AMERICAN STATISTICAL ASSOCIATION.† Dr. Hill's study included in all 185,788 women, 78,432 of whom had been married ten to twenty years. These 78,432 were divided into four classifications: (1) white native parentage, (2) white foreign parentage (first generation), (3) (second generation), (4), negro. The areas covered were the state of Rhode Island, the city of Cleveland and 48 mainly rural counties in Ohio, Minneapolis, and 21 mainly rural counties in Minnesota. The native white of native parents are of course the only ones that can fairly be compared with our college women. For them the figures were as follows:

* Statistics of Yale Graduates, Yale Review, 1908–09, p. 337.

† Quarterly Publications of the American Statistical Association, Vol. XIII, Dec. 1913, p. 583.

TABLE XII.

BIRTH RATE OF NATIVE-BORN WHITE AMERICAN WOMEN UNDER 45 YEARS OF AGE, MARRIED 10-20 YEARS.

| Total Number. | Bearing No Children. | | Total Number of Children. | Average per Married Woman. | Per Cent. Bearing. | | |
|---|---|---|---|---|---|---|---|
| | Number. | Per Cent. | | | 1 or 2. | 3, 4, or 5. | 6 or More Children. |
| 15,953 | 2,097 | 13.1 | 42,933 | 2.7 | 39.8 | 37.2 | 9.9 |

The interesting fact here is that Dr. Hill's average number of children per married woman, 2.7, is identical with the 2.7 children which each Bryn Mawr marriage of over ten years duration averages. Here, at least, we find two groups of women, college, and selected from the population at large, identical as to age, race, and duration of marriage, who average the same number of children per marriage.

In conclusion we may say, first, that the birth rate of college women is ascertainable; second, that, in so far as it can be compared to that of the sisters, cousins, and friends of college women, it is probably very little lower, or about the same, *i. e.*, the non-college woman has more children, but the college woman bears more per year of married life; third, if we compare it with that of men college graduates, we find only a lower rate for the women; fourth, in comparing it with the only definite study so far discovered, of women from the population at large, of similar race, of child-bearing age, married ten to twenty years, we find almost completely identical figures. Obviously none of these comparisons are of great value. The numbers included are in most cases too small or the ground covered too limited to enable us to give the results any widespread application.

The purpose of this study, as stated in the introduction, was the answering of two definite questions: First, is the higher education of women absolutely and relatively increasing in this country? Second, has this increase, if there is any, an appreciable effect upon fecundity?

The first of these questions must be answered definitely in the affirmative. A careful investigation of the figures at hand shows not only a larger absolute number of girls than of boys

in the high schools of the United States, but a greater ratio of increase in college attendance for girls than for boys, and a steady increase in the proportion of women students to the entire body of college students.

The answer to the second question—Has this increase in the higher education of women any effect upon fecundity—is not so satisfactory. It has been found (1) that the proportion of women college graduates who marry is approximately one half (slightly over one half in most cases); (2) that the proportion of men college graduates who marry is somewhat higher; (3) that, comparing college women with the census figures of population at large, the marriage rate among non-college women is considerably higher (59 per cent.) than among college women; (4) that the higher marriage rate of men and non-college women (where it is higher) may quite conceivably be due to causes other than that of education.

The figures and conclusions obtained are, at best, inadequate. Obviously they fall far short of showing any appreciable effect of the higher education of women upon fecundity. The college statistics are accurate and reliable as far as they go, but there are too few colleges which keep any records of fecundity, and the greater part of the figures obtainable are too recent to be fairly representative of college fecundity. High and normal school statistics on the subject of fecundity are practically non-existent, and present a field of work which would adequately repay careful investigation. The figures do prove conclusively the impossibility of justifying any statement that the higher education of women does or does not lower fecundity.

As far as any positive conclusion is concerned, the figures only show the existence of two separate phenomena of continually increasing importance, which might, were all the facts of the case revealed, show a close inter-relation. Obviously the importance of investigating the facts and obtaining all possible information and statistics cannot be overestimated. The entire trend of our higher education of women should be, and I confidently believe will be determined in large measure by its effect upon fecundity.

# REVIEWS AND NOTES.

Dr. Georg von Mayr, the distinguished German statistician, who has been chosen for the current year as rector of the University at Munich, devoted his rector's address* to the position of the political sciences in university education. Speaking of statistics, he said in substance:

Statistical data have multiplied exceedingly and inferences regarding the conditions and changes of man's social life are steadily accumulating. But by the irony of fate, along with these conditions, strange destructive tendencies are at work. The attempt is made to demolish statistics as a science and relegate the statistician to the position of a Helot allowed only to gather materials for the use of other sciences. Modern epistemologists have sought, with revolutionary theories, to clear our science out of the way, but in the end, they cannot escape bringing it back under another title, as a social science of masses which can be counted and measured; only they refuse it the name of statistics. Furthermore, within our own camp, we have enemies in the shape of some mathematical statisticians who would limit statistics to certain regularities in social or other masses which can be expressed in definite formulas, and thus they would leave our science stunted and barren.

At present, we are without a clear and coherent conception of the political sciences but such a conception is slowly taking shape. We may distinguish the original or literal sense of political science, of which the state is the center, and the later, or derivative, sense, in which statistics, sociology, and economics stand beside politics, or the science of the state, as coördinate branches of political science or social science. Statistics, as the science of social mass phenomena, so far as they can be counted or measured, is bound to take an important place in this new development of the social sciences.

W. F. W.

* Die Staatswissenschaften und ihr Standort im Universitätsunterricht, München, 1913, pp. 27.